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ROTATION OF CROPS.

By W. C. Nicholas, esq., Vice President of the Society.

From the Memoirs of the "Society of Virginia for Promoting Agriculture."

Of all agricultural subjects, this perhaps is the most important, and to a Virginian, the most difficult. Experience affords us but little light upon the subject. The practice in Virginia, heretofore, has been to cultivate our lands more with a view to immediate profit, than with any regard to the future. All the various soils in the country eastward of the mountains, have been used in the same way, and the same crops have been cultivated by all, without regard to the fitness of the soil, or to the situation of the farm. Every thing that could be drawn from it has been eagerly taken, without giving any thing in return, by ameliorating crops, manure, or even rest. The lands have either borne, in succession, exhausting crops, or it has been as much or more injured by improper use of it in pasture, as it is falsely called.

In fixing on a rotation, a farmer should ascertain what crops are best suited to his farm, and in what succession such crops ought to follow each other, so as to make the greatest possible profit, consistently, not only with keeping his land in good heart, but in an improving condition. "A judicious rotation of crops is the ground-work of general improvement. If a judicious system be adopted and persevered in, it cannot fail. No mode of execution can make up for a defective one. The same crops which under one system would be unprofitable and injurious to the land, under another rotation, with intervening ameliorating crops, might not only be profitable, but might promote its fertility." What I shall suggest to the society upon this subject, will be the result of my own experience and observations, assisted by all that I have been able to derive from the English and Scotch writers—making the necessary allowance for difference of climate, soil and products. I have, without scruple, availed myself of their suggestions, whenever they appeared rational, and more particularly, when they were founded upon facts properly vouched for. In speaking of the agriculture of Great Britain, I cannot deny myself the satisfaction of expressing my warmest admiration of the exalted merit and patriotism of the distinguished men of that country, who have, by devoting their talents, time and money, to agricultural pursuits, brought that most useful art to a perfection unknown to their ancestors, or to the people of any other country. The Duke of Bedford, Mr. Young, Lord Kames, Mr. Anderson, Sir John Sinclair, Mr. Coke, Lord Sommerville, and others, may have less splendor attached to their characters, but I have little doubt, that they have been more usefully employed than Mr. Pitt, Lord Castlereagh, the Duke of Wellington, or Lord Nelson. I trust the people of Virginia will not be less attentive to the improvement of a country so deservedly dear to them.

I will consider, first, the principles on which rotations ought to be arranged; next, the various sorts of rotations which have been adopted in Virginia, for different periods of two, three, four, five, six or seven years; and lastly, any miscellaneous particulars connected with this branch of inquiry.

It is not believed that the same land, without some interval, will continue to yield the same plant to advantage; there may be some exceptions, but they can only occur where the land is the richest alluvion soil, or is frequently and heavily manured. A farmer should, therefore, avoid frequent repetitions of the same articles in his rotations. The propriety of adopting any particular rotation must depend on the climate; for it would be absurd to attempt to make gourd-seed corn and sweet potatoes in Greenbrier; a light, sandy land should never be selected for grass, nor cold, wet, stiff land for corn; on the situation of the farm in regard to markets, for some articles will pay well in some situations that would be unsaleable in others; and upon the condition of the soil, whether fertile or exhausted. A farmer cannot carry on his business, unless he has various kinds of crops upon his farm. If he had nothing but wheat and tobacco, he might not be able to procure corn and hay. By having various articles, he does not run so much risk, either in regard to the season or the sale of his produce; and if he fails in one article, he may succeed in another. The crops should be so arranged that the labor of ploughing for each, of sowing, weeding, &c. shall proceed in a regular succession, and the labor or business of the farm should not be too much crowded at any one season of the year, but that the crops produced on the farm should be cultivated by the same hands, (except in harvest,) and the same teams. Avoid, as much as possible, having two grain crops in succession; but alternately to have grain and grass crops; in this country, a deviation from this rule must be admitted; so that small grain of some kind, must succeed corn: this is unavoidable, but must not recur too frequently. To raise those crops most likely to be productive of manure, the use of which cannot be dispensed with, under any rotation that can be devised. To arrange the crops so as to keep the land in good condition and increasing in fertility. Variations in the rotation will be found necessary and expedient, as the condition of the farm may alter. Keeping these maxims in view, the various systems that have been practised in Virginia shall now be considered.

Two years' rotation.—When wheat was first made a crop for market in that part of the state that had been previously devoted to the culture of tobacco, the rotation was corn and wheat alternately. It was soon found that this course was too hard for the land, and that wheat and corn, in such rapid succession, gave precarious and scanty crops, and that even the river bottoms could not bear such a scourge. I am satisfied that nothing short of manuring, very heavily, the half that is in corn, will justify the expectation of either good crops, or preserving the fertility the land might

have possessed when this course commenced. The impracticability of doing that without summer food for cattle, and with no winter food but what the offal of the wheat and corn affords, must cause this rotation to be rejected at once. If it was possible to ensure a good crop of clover, after every crop of wheat, I believe alternate crops of wheat and clover would be made without injury to the land: but the clover crop is too uncertain to be relied upon for this. It is rare that clover succeeds after a heavy crop of wheat, by which it is subject to be smothered; it is likewise liable to be killed by frosts and severe droughts, in its infant state, and it is said that land tires of it as soon as of any crop.

Three years' rotation.—Corn, wheat and pasture; this is the most common rotation practised in Virginia. Under this rotation, as under the last, the lands have grown worse yearly, as under that, most of the maxims upon which judicious rotations are founded are violated. There is not a proper mixture of grain and green crops; the grain crops perpetually succeed each other, and the proportion of land in grain is too great. If the farm were in good order when this rotation commenced, and the land regularly sown with red clover when in wheat, and plastered the spring when the clover was sown, and the plaster repeated the next year, and a sufficient stock kept to convert all the offal of the corn and wheat into manure, it is possible that the land would not be rapidly injured. If this course were observed, the materials for making manure would be so abundant, there is no question it could be made in large quantities, the whole produce of the farm contributing to it; upon this plan much reliance must be placed upon soiling, which the experience of many years has taught me is a precarious dependence in this climate. I am far from recommending this rotation except upon rich bottom land; but if it be pursued, I do recommend it upon the plan here suggested, with the addition of some provision of grass land for early and midsummer pasture. One twelfth part of the most suitable land on the farm cannot be more beneficially employed than in this way. I consider cattle and hogs as an essential to every farm, not only for the purpose of making the manure necessary for the farm, but as the only means of supplying the country with food from our own resources. A farmer should buy nothing that he can make or raise for the use of the farm. If where the three years' rotation is practised, the farm should be thrown into four divisions, and one of them is kept in grass for pasture, and thrown out of the rotation for several years, the land may possibly improve in fertility, if there should be proper exertions to make and apply manure.

Four years' rotation.—Admits of greater variety in the succession of crops. The course most approved in the country below the falls of the river, which is generally denominated the corn country, from that grain being considered the staple of that district, is corn, wheat, and two years in clover. Its effects I have had no opportunity of judging of; it is recommended in such strong terms by the president of our society, that I can have no doubt of its advantages in that tract of country which is better adapted to corn than to wheat. It gives a greater proportion of corn and less of wheat, than I have been accustomed to make, or than it is advisable to attempt in a broken stony country, inconvenient to market, and where manual labor does not abound. In a tract of country above the falls, and below the Blue Ridge, wheat is considered the staple. An increase of the quantity of corn is no compensation for a diminished crop of wheat. One fourth of a farm in wheat, and that after corn, when the crop is always worse than after fallow, is not considered enough. I once cultivated a plantation in a rotation of four years. My course was corn, wheat, clover, wheat, and the plantation evidently grew worse. I should remark, that during that experiment, the fields were not pastured, nor was I very successful with the clover crop, it having failed more than once. Three crops of grain in four years are too many for any high land. If the plantation had been laid off in five fields, and one field had been alternately thrown out of the course, as suggested in the three years' rotation, the benefit to the land and to the stock from a portion of the land being for a number of years in grass would be attained. So far as my experience or observation goes, wheat may succeed clover with every prospect of a good crop. Sir John Sinclair, however, states it to be the opinion of many of the most intelligent and successful farmers in Scotland, that clover land ought not to be sown in wheat. There may be some difference in the climate or soil of the two countries, that may make the difference upon this subject. However, it is proper that every judicious man should be on the look out, as our experience has not been such as to be conclusive. When this rotation is practised, I would pasture moderately the clover field the last year it is in grass. In every rotation where the land is to remain not more than two years in grass, I am decidedly of opinion, that clover seed should be sown on every crop of wheat, at the rate of a bushel of clean seed to ten acres. The cost of the seed is no consideration in comparison with the value of the crop or the improvement of the land from it. Many people believe, that after clover is once well taken, it is unnecessary to sow again; land will sometimes reseed itself, but it will more frequently fail. The famous Norfolk four years' rotation, which has made that one of the most productive counties in England, is turnips, barley, clover, wheat; the land always manured for turnips, and the turnips fed off by sheep, which is a dressing twice in four years.

Five years' rotation.—This is the rotation practised by Mr. Wickham upon his highly cultivated and productive estate upon James River. Its success recommends it highly on rich land. It has been in use for seventeen years; during that time his crops have been the best upon the river, and from what I hear, the average of the last nine years is at least double the first term. I have repeatedly seen his crops of wheat and clover from May to harvest, and I have no hesitation in saying, that they are the best, taken throughout, I ever saw. I have seen in other plantations, lots and parts of fields that were equal to his, but I never saw entire fields under as good crops, either of wheat or clover. Before this land came into his hands, it had been cropped in the three years' rotation. The succession of crops in his rotation is, 1st corn, 2d wheat, 3d clover, 4th wheat, 5th clover. I consider his experiment as establishing, conclusively, that by the free use of plaster of

Paris, and the proper exertions to make and apply manure, that five years' rotation may be relied upon to give fine crops on lands in good heart, and to keep the land in a state of regular and progressive improvement. Although the number of acres that are in grain by having six divisions instead of five, would be fewer, I believe the quantity made would not be lessened, and I am confident the land would improve faster, with the advantage of summer pasture for stock and the diminution of labor in seeding only one-third of the farm, instead of two-fifths, with the further advantage of commencing, whenever the extra field was to be brought into the rotation, with a naked fallow; which I fear will be found indispensable. From the increase of strong perennial plants upon our lands, since they have been less frequently than formerly planted in corn, I suspect we shall be obliged to resort to naked fallows once in six or seven years to keep them clean enough for wheat. For these reasons I should prefer six divisions; the sixth field I would use as it is proposed the fourth and fifth should be used in the two preceding rotations, to be sown with a mixture of grass seed for pasture.

Six years' rotation.—1st corn, 2d wheat, 3d clover, 4th wheat, 5th clover, 6th clover; this course of crops may be practised to great advantage upon weak or worn lands. It may be varied thus; divide the arable land of a farm into three fields, one of which for corn and clover in equal parts, one in wheat, (half corn and the other half fallow,) and one in clover. Under this course one-sixth of the farm would be in corn, one-third in wheat, and one-half in clover. That part of the clover that is in the enclosure with the corn, to be mowed for hay, and the produce of the field that is in clover to be applied to the support of stock in summer, by soiling and by being pastured.

Seven years' rotation.—1st corn, 2d rye, 3d clover, 4th wheat, 5th clover, 6th wheat, 7th clover. Perhaps as beneficial a rotation with a view either to profit or improvement would be, 1st corn, 2d rye, (the corn and rye to be consumed on the farm,) 3d clover, 4th wheat, 5th clover, 6th wheat, 7th pasture for six years, on which I would sow greensward, orchard and herds-grass, meadow oat and red clover. It will be remarked, that in this rotation the last crop in the course is wheat, and the first and second corn and rye, being three crops in succession. It is supposed the land would be amply compensated for this by the entire crops of rye and corn being consumed on the farm, and each field in its turn being in pasture six years. Where one-seventh of the land is manured for corn, the produce of two-fifths of the land that is in grain consumed upon it, and three-sevenths of the farm in grass, there can be no doubt of produce and improvement sufficient to satisfy any reasonable man. I am informed the lands on the south branch of Potomac are cultivated in corn six, seven and eight years in succession, after which they are pastured as long, and in that time are supposed to be completely renovated.

Of the foregoing rotations, I should prefer the five years' rotation for good land, but think it would be more perfect, if the farm was thrown into six divisions and one of them kept in grass the whole round. For weak or thin land, I should think the change I have suggested indispensable. With that variation one-half the land would be in grain, and the other in grass.

To avoid repetition, I have purposely omitted mentioning tobacco, not from a belief that its culture should be abandoned; on the contrary, I think it will be long one of the best articles of produce for a Virginia plantation; at any thing like the present prices, it unquestionably is so. Persons distant from market, or those who can make tobacco of the first quality, will probably find it their interest to continue its culture for a great length of time. If it is made upon new land, it does not enter into the rotation of crops; it is used as a preparation for other crops. If it is made upon old land, it should be planted upon the lands that in the different rotations I have given, are allowed for corn. It will be found an easier crop to the land than corn, and will invariably be succeeded by a better crop of wheat.

Miscellaneous observations.—It is obvious, that at the commencement of an improving system upon an exhausted farm, or upon poor land, it is proper to begin with gentle rotations; when the soil is improved, it will bear more severe cropping.

By the high price of wheat, farmers have been induced to cultivate too much land in grain, and there is reason to believe, that stock, the great source of manure, being neglected or almost given up, the soil will be exhausted by the severity of cropping. The late change in Europe to a state of profound peace, must cause the price of grain to fall, which, added to a decrease in the produce of the land, must bring distress upon the farmer; stock of every kind must rise on account of its scarcity, a circumstance which cannot be remedied for many years. The ready answer given by every man, when he is asked why he works his land so hard, is, that he must have the crop from all the land he cultivates, that less will not support his family and defray his expenses. Great and weighty considerations, I admit; but is it not a fatal error to believe, that one hundred and fifty acres of land, in an exhausted state, will produce more than a third, or at any rate half, the same land, well cultivated and improved by the manure that can be made, the free use of plaster and clover, and the proper mixture of ameliorating with exhausting crops? Let these questions be tested by experience.

John Wickham, esq., when he purchased his upper farm, I understand, could not expect more than from two thousand to two thousand five hundred bushels of wheat, annually, according to the season. His crop is now from four to five thousand bushels. Thomas Marshall, esq., took possession of his estate, when two and a half barrels of corn, and five or six bushels of wheat to the acre, would have been thought good average crops; he now makes from six to eight barrels of corn, and from fifteen to twenty-five bushels of wheat to the acre. For these facts, many of the members of this society can vouch. Little more than half Mr. Wickham's land, produces more than double the grain he used to make upon two-thirds. Mr. Marshall has been equally successful. I hope those gentlemen will favor the public, through this society, with a full statement of their improvements. Sir John Sinclair says that the lands in some districts in Scotland, were formerly cultivated in grain, three years in four; the rent was then from twenty-five to thirty shillings per acre; the same lands are now in grain not oftener than three years in six; they pay from five to six

pounds rent, and make more grain from half than they formerly did from three-fourths of the farm. These great and important changes have been made in Scotland, in about forty years.

A safe rule by which to proportion the crops of grain is, not to suffer more than from a half to three-fifths of the farm to be in grain in one year. Let the land that can be manured, be the limit of the corn crop, to be succeeded by wheat, rye or oats, according to the soil, and the relative value of each species of grain, and then complete the rotation by alternate crops of small grain and clover, allowing one field to be always in grass for pasture. I fear many farmers will be deterred from following this advice, from a belief that it is impracticable to accomplish what I propose. I pledge myself that any man who will make proper exertions, may make the quantity of manure that will be necessary. A farm of three hundred acres in six fields will have six of fifty each; twenty loads of forty bushels to the acre, will require a thousand loads for a field, to be spread over the surface equally. If the manure be applied to the hill or the drill, one-fourth of the quantity will be sufficient for the corn crop. The application in either mode will give from two hundred and fifty to three hundred barrels of corn from the field, as the year is favorable or otherwise, in one of these modes. I know it is in the power of every man upon such a farm, to manure fifty acres; if he will provide winter and summer food for his stock, and use due diligence in making and saving manure, and consume all his wheat straw and corn stalks as litter for his stock. In this way, then, half the land will be made to produce the quantity of corn usually made, with a great saving of labor, a certain and constant improvement of his farm, and a crop of wheat, double what he would make, when one-third of his land was planted in corn, and all his wheat made upon corn land.

The nature of the soil should have the greatest influence in deciding upon the crops to be made. In most cases, that crop will pay best, that the land is best adapted to. If the distance from market is too great to transport grain of any sort, still it is made to great profit, for fattening stock and for distillation. On the south branch of Potomac, corn is the principal crop. Where the lands are peculiarly adapted to corn, let that be made the staple; so as to wheat, and every other plant which is cultivated. Upon the dry, thirsty uplands of the mountainous country, corn is as precarious a crop, as wheat is upon the light lands of the lower country.

The great error in Virginia, heretofore, has been, that we have cultivated our lands without intermission; that we have attempted crops without any attention to the quality of the land, or the fitness of its culture; that we have taken every thing from the soil, without returning any thing to it, and that even now, when there is a strong solicitude to improve our lands, we are attempting it in a way that cannot succeed. I believe that by the due application of plaster, and the proper mixture of clover crops, if the clover succeeds, good land may be kept in heart; but if our lands should tire of clover, or become clover sick, as has happened in other countries, this resource will fail. Is there any man so credulous as to believe, that by clover and gypsum alone, the gullied and exhausted lands of Virginia can be reclaimed? I believe not; if there should be, I can assure him he will be disappointed. Before clover will perform its office, the land must be made capable of holding and sustaining it; nothing but manure will enable such land to do this, and to have manure, there must be stock on every farm, with a sufficiency of food for winter, and pasture for summer. Soiling for some time, may be practised to advantage, but it is not to be relied upon in this dry, hot climate, with any certainty, for more than two months, and can scarcely be practised at all in the harvest month, from the middle of June to the middle of July; because the farm hands are fully employed in securing the grain crops. Instead then, of excluding stock from our farms, they should be considered indispensable, not only for the purpose of making manure, and for the necessary supply of the farmer, his family and laborers, with meat, milk and butter, but as a means of affording income. Instead of Virginia having a surplus of meat and horses, as she ought to have, our supply is drawn to a very serious and alarming amount from other states. A vast proportion of the beef and pork consumed in our towns, and much of that which is used in the country by the farmers, is brought from other states. I am sure it is a reasonable estimate to say, that Virginia has paid, in the last five years, to the people of the western country and North Carolina, not less than a million of dollars a year for cattle, horses and hogs, nearly one-fifth of the value of our tobacco crop, thereby impoverishing the people, as well as the land of Virginia.

I have no scruple in saying that at this day there is less pasture land and less stock in Virginia, in the country east of the Blue Ridge, than there was thirty years ago. I must not be understood to approve of the ancient management of stock and pastures, when the stock was permitted to roam over the plantations, during the winter, and poach the earth, nibbling every atom of herbage that escaped the frost, and snatching every particle of the spring growth, as fast as it was high enough to enable them to bite it. Under this management, the land was injured and the supply of food inadequate; the stock miserably kept through the winter, a great loss in the spring of every year, half starved through the summer, and the manure from them at all seasons, small in quantity and meagre in quality. Instead of which, I recommend the forming of lots for the spring use of milch cows, yearling calves, mares and colts, and ewes and lambs: the more hardy stock to be kept upon dry food until the woods will sustain them, which they will do for two or three weeks in all the upper and most of the lower country; after which, towards the middle of May, the common pasture of the farm may be used, and soiling commence. One-twelfth or fifteenth of the farm of suitable land, in three or more grass lots, on a farm of any size, to be sown in greensward, orchard and herd's grass, meadow oat and red clover, will be of as much value as the same number of acres, in any crop, deducting the expense of culture, that ought to be charged to either grain or tobacco. When the common pasture is open to stock, or when it shall be sustained by soiling, the lots to be shut up for summer use—after the first of September there is never a want of pasture. From that time until March, the lots should not be depastured; the fall

growth will be very considerable, which will be valuable food in March and April, the top of it only being injured by the frost. Where there are two fields of clover in the rotation, perhaps a better use for the land cannot be made of one of them, than to pasture with stock with due caution. Exclude every thing until the clover is in full bloom, continue the stock upon it only long enough to make way for the second crop, excluding them always when the land is wet. There is no stock on a farm more benefited by clover, or less injurious to it or the land, than hogs. Except for the comfort of resting themselves in wet or moist places, in very hot weather, hogs will not root, particularly when the land is dry, if they can get plenty of food without it. They have the ability to procure sustenance in that way, but I am satisfied it is only necessity that makes them resort to it. By using one of the divisions of a farm for pasture, with the aid of lots, I am satisfied that as much manure may be made and applied every year to the field in corn as will make it a fine crop; that horses enough may be raised in Virginia for our own use, and that instead of purchasing a great proportion of the meat we consume, in a very few years, we should have a considerable quantity for exportation.

Here I beg leave to call the attention of the society to the effect of fattening stock on the farm, with a proportion of its produce. It is to make the land more productive in every thing from the vast quantity of the richest manure it affords, which imparts its fertilizing power to every part of the farm in its turn. If the crop of corn is consumed by cattle on the farm, there is no question but that the subsequent crops, both of corn and wheat, will be increased, by the application of the manure it will furnish, which excess may, of itself, pay a good price for the corn so consumed. If in addition, you can obtain a fair price for the corn, by the fattening of cattle, with a saving of the trouble and expense of its transportation, the farmer would be doubly paid. I am warranted in recommending feeding stock by the success of the South Branch farmers, who have become in thirty years, the most wealthy in Virginia, by the culture of corn, without ever having exported from the district, one bushel in grain; the whole crop being consumed on the respective farms. In Great Britain, the advantage and propriety of this practice are so fully understood, that there is never more than from one-third, to half their farms, appropriated to grain. The vast product of potatoes, turnips, cabbages and grass are applied to the feeding of stock, *on their farms.* In this way they believe, and I have no doubt of the fact, that they make more grain than they would do, if a greater proportion of the land were made to produce it. In England, this practice is carried so far, that oil cake is purchased and used for fattening cattle, with a knowledge that its chief benefit is derived from the richness it imparts to the manure, made by the cattle to whom it is fed.

The wisdom and economy of making as much grain upon twenty acres of land as they formerly made upon fifty, are there fully understood, and they are so rational as to believe it is better to have their farms improving than decreasing in fertility—and this is done by men who have only a short and temporary interest in the land, while we, the people of Virginia, who pride ourselves in being the lords of the soil, show so much indifference to its preservation. It is believed, and I fear justly, that our climate is unfavorable to the product of potatoes and turnips, which I consider a misfortune; but it is not pretended that either our soil or climate is at all so, to carrots, parsnips, scarcity, Jerusalem artichokes, or the sweet potato, cabbage, rape, or Swedish turnips. We have a great resource too in pumpkins, not less valuable for the quality of the food, than any of the roots, and only made so, by the time at which they must be consumed. Much of our grain, both corn and rye, might be fed to great advantage, by being ground and fed on cut straw, or steamed, and perhaps more profitably than to sell it in grain, at the common prices.

The benefit to the farmer and to the land, from feeding stock, is so well understood in Great Britain, that it has become an agricultural maxim, that whenever a farmer discovers he can be as well paid, by cultivating food for cattle as for man, he should prefer it, because of the increased quantity of manure it gives. Mr. A. Young remarks, that "that country, that farm will be most improved, and most productive, upon which the greatest quantity of cattle and sheep are kept. This holds good, of an acre, a field, a farm, a district, a province or a kingdom."

By providing food for a due proportion of cattle, hogs and sheep, the quantity of grain will be increased, and "the meat, cheese, milk, butter, wool and leather, are so much additional produce gained from the land; by means of which, the wealth of a country and its power of providing for a numerous population, is enormously increased."

I trust there is no possibility of my being so far misunderstood as to have it supposed, that it is my desire to convert all our arable into grass land, or that I wish to increase the quantity of grass by diminishing the product of bread-stuff. I recommend stock as an auxiliary, whose agency is to be made to contribute to the increase of the grain crop, and to be subservient to that object. It is essential to the utility and chance of profit from stock, that they should be abundantly fed through the year, and the quantity of stock kept proportioned to the food *provided;* remembering always, that it is better for every purpose that a farm should be under than overstocked. In the neighborhood of my estate in Albemarle, we have no resource for the summer support of cattle, but those furnished by our arable lands. We are without swamps or marshes, and we are so fortunate as to be able to cultivate all our cleared lands in succession. I do not believe within eight miles of Warren there are fifty acres of waste uninclosed lands. Under these circumstances, we must abandon stock or depend upon what can be derived from the farm by pasturage and soiling.*

W. C. NICHOLAS.

* The following is an extract of a letter from a gentleman of the first respectability, who is distinguished as a farmer, and who has improved highly a tract of land that had been very much exhausted. It is published to corroborate my opinion of the importance and value of stock, both with a view to the improvement of a farm and the profit to be derived from it:

"I regret that it is not in my power to give any thing like a satisfactory account of the ancient mode of cultivating the soil which it has fallen to my lot to manage. The modern and more improved mode of

PLASTER OF PARIS.

From the same.

Clifton, October 16, 1818.

Dear sir—The following facts go farther in establishing the duration of the effect of plaster of Paris on clover, than any I have seen or read of, and are therefore thought worthy to be communicated.

In the year 1813, I purchased a tract of land in Goochland county, then in the occupancy of Mr. George Harding, as tenant for years, whose lease expired at the end of the succeeding year. One of the fields of highland, in wheat, after corn, at the time of the purchase, was again in wheat in the year 1814. In 1815 I pastured it; in 1816 sowed oats, and in the fall sowed wheat. In the spring of 1817 sowed clover and plastered at the rate of a bushel per acre, but left a belt unplastered, about fifty feet wide, through the field. The difference between the clover in the belt, and that on either side, was manifest in the fall following, and in the latter part of April, 1818: that in the belt was about three inches high, of a pale green color; and that on each side about nine inches high, and of a deep green. At this period, while riding over the field, I discovered in the unplastered belt, a number of tufts of clover, about the size of a man's hat, equal in luxuriance to that which was plastered on either side. Upon farther examination, I found that these tufts were in exact checks, about the usual distance of corn rows. It occurred to me immediately that Mr. Harding must have plastered corn there in the check. Upon reporting the fact to him, however, he says that he never used any on that part of the farm, but that Mr. Peter Baker, his stepfather, and predecessor, planted in corn, in 1805, and put a measured spoonful of plaster into each check, but never discovered any benefit to the corn. Mr. Harding further states that he never knew any plaster to be used in that part of the farm, by Mr. Baker, either before or after that time. Nor did he ever know clover seed to be sown there. The tufts before mentioned, kept pace in their growth with the plastered clover on each side of the belt, which became sufficiently luxuriant to make a fine crop for the scythe, when the clover in the unplastered belt would have afforded but indifferent grazing, except the rows of tufts, which were so luxuriant as to be distinctly counted at the distance of half a mile: and, indeed, are visible at a considerable distance, to this day, notwithstanding the field has been heavily pastured during the last three months.

It will be observed, that as far as this statement goes, the field alluded to above has undergone a hard course of cultivation, and from its appearance at the time I took it, and other circumstances, I think it fair to presume it had been severely pressed, from the time the plaster was deposited in the checks. I never perceived any spots in the crops of grain which could lead to a conclusion, that the plaster had any effect on them. It appears, then, that it must have been, for the most part, inactive during twelve years from the period at which it was deposited in the earth. And if we suppose that the frequent ploughings and harrowings it underwent, dispersed it in such a way as to leave not more than a proportion equal to that on each side of the belt, which I think would not be far from a fair supposition, it would appear to have suffered but little diminution in its fertilizing principle.

With very great respect, I am, yours,

RANDOLPH HARRISON.

DR. JOHN ADAMS,
Secretary Virginia Agricultural Society.

CULTIVATION OF COTTON IN BRITISH INDIA.

From the New York Journal of Commerce.

London, August 31*st*, 1840.

This subject has for many years occupied the attention of English capitalists, but it is only within the last year or two that any very serious efforts have been made to reduce the theories advanced to any practical result. There has been a growing anxiety in this country to render the manufacturer of cotton goods, if not independent of the United States for the raw material, at all events less dependent than he hitherto has been; and a very strong feeling appears to exist here, that at no very distant day, British manufactured cotton goods may be formed entirely of cotton raised in the Indian empire. Since the trade has been thrown open with India, and the monopolies of the East India Company half crushed, if not annihilated, private enterprise has been directed to this important branch of trade, and several of the most scientific and practical men in the United States, occupied in the growth of cotton, have been closely questioned and consulted as to the propriety and prospects of similar plantations on the other side of the Cape of Good Hope. From all the information that has yet been gleaned, the inquirers appear to be satisfied that there is no insuperable bar, rational objection, or even feasible reason, why cotton should not be equally as well grown in India as in the south of the United States; and having engaged many first-rate overseers from South Carolina, it seems they are resolved to go seriously and strenuously to work to test the experiment. Four gentlemen, of considerable intelligence, and from what I learn, who have

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farming had already been adopted in part, when I came here to reside. The ploughing, however, is deeper now, and better executed than formerly; plaster of Paris is used in greater abundance, and more manure is carted out upon the fields. Not long after my arrival, my stock of cattle was considerably diminished, with a view to give the land as much as possible the benefit arising from clover considered as a mere manure. For five or six years I have been nursing my land carefully, and have had some very poor fields to reclaim; but I am now able to fatten 50 or 60 beeves annually for market, without sustaining any inconvenience; indeed I consider the grazing of those fields which I propose to fallow in any given year, as a decided advantage; because I am enabled, by this means, to have the ploughing executed more effectually, and to prepare a good seed bed for the wheat. The surface of our country is much broken and exhibits many poor knolls, where improvement has not progressed far, which are not only a great detriment to the appearance, but a material drawback upon the produce of our wheat fields. Upon some of those spots I have been in the habit of having my farm cattle penned every night, and others I have endeavored to cover with manure. The results have been in every way satisfactory."

been all their lives engaged upon cotton plantations in the United States, have arrived in this country within the last fortnight, and are about proceeding for India, to superintend plantations, either formed, or about to be formed, in the presidencies of Bombay and Bengal.

Very recently a special meeting of the Manchester Chamber of Commerce was convened for the express purpose of entertaining this interesting question, and as the doings on that occasion are so important to your merchants and southern friends, I will endeavor to give you a sketch of the proceedings. On the table were three specimens of India grown cotton, from the same piece of land, and they had all undergone "one of the first operations of manufacture." Two of these specimens had been ginned in the usual way, and the third had been operated upon by a machine for 'ginning,' the invention of Messrs. Fawcett & Co. of Liverpool, and owing to its superior appearance and cleanliness, was admitted to be worth "a farthing to three-eighths of a penny" more than those specimens which had been prepared in the ordinary manner adopted in the United States.

The chairman of the Chamber, Mr. J. B. Smith, expressed himself in very sanguine terms. "There was nothing," he observed, "in the course which the Chamber had pursued, that could afford the least ground of jealousy on the part of our brethren in the United States. The Chamber, he had no doubt, were all wishful that we should deal with our colonies in their produce, rather than with other and independent countries. They had no wish to put down the growth of cotton in any country. On the contrary, it was their wish that it should be cultivated wherever it was possible."

It appears that the East India directors finding that a number of spirited individuals had resolved upon the cultivation of cotton in India, made a virtue of necessity, and set about inquiring into the possibility of the thing for themselves. The consequence of their researches was a report which Mr. Smith, at the conclusion of his address, introduced, and which was read to the Chamber.

That report, framed evidently with great care and the result of the minutest investigation, is a document almost too important for condensation, but as it is more than probable that you will give it at some future day, entire, I will merely run over its contents. It begins by stating that "The question of obtaining cotton from various countries must necessarily be interesting to a manufacturing community whose prosperity greatly depends upon a plentiful and steady supply of the raw material, since it must be obvious that security against the contingencies of failing crops, political disagreements, or unsteadiness of price, arising from speculative combinations, must be in proportion to the number of channels from whence we derive our supplies." The chamber is then congratulated on the progress made for obtaining "an increased supply and improved quality of East India cotton," and a description is given of the successful manner in which cotton has been cleaned in Bombay. The mode of performing it, however, is declared to be both slow and expensive, requiring some mechanical skill to meet the otherwise "insuperable obstacles to a greatly extended production of cotton in the colonies." To aid in the enterprise, all transit duties have been abolished in Bombay, and the same policy is about being adopted in Madras. The Governor General of India has offered three prizes for the growth of a certain quantity and quality of cotton. The first 20,000 rupees—the second 10,000 rupees—and the third 5,000 rupees. Captain Baylis was despatched by the India government to the United States for the purpose of engaging competent persons to superintend the culture, and has succeeded in his mission. He is on the point of returning to India with a collection of a considerable quantity of seeds, and also with several American saw gins for cleaning cotton.

The several gentlemen who had consented to accompany Captain Baylis from the United States to the East Indies, had been introduced to the Committee of the Chamber, and had pointed out to them the deficiencies of Indian cotton, "particularly in reference to its cleanness and irregularity of staple, both of which they expressed confidence in being able to improve." The same mills have been set up in Liverpool, and on the 17th of July last, some members of the Court of Directors of the East India Company, with several gentlemen of the Manchester Chamber of Commerce, assembled at the former place "to witness the experiment to be made in the machinery for cleaning cotton. A repetition of these experiments was also made at Manchester, and the result was that the directors of both bodies "consider those experiments to be, on the whole, highly satisfactory, as proving, beyond a doubt, the practicability of cleaning India cotton with the American saw-gin; although it is evident, at the same time, that personal skill and experience will be requisite to adapt the machine to the particular species of cotton it is intended to operate upon."

The special report of the directors of the Chamber then goes on to state that "it appears to be a very judicious arrangement which the Hon. East India Company has adopted, viz: to send over to India, with the machines, several talented and experienced gentlemen, natives of the United States of America, and brought up as cotton planters, who will be able to give a new impulse to the growth of cotton in India, and to devise and carry into effect the best methods of driving the saw-gin and applying that machine to the very important purpose of cleaning the cotton so produced."

The vital importance of the American saw-gins will be seen at once when you remember that with one of these machines 1100 lbs. to 1200 lbs. weight of clean cotton can be produced per day, whilst the machine used in India, the Chinka, can only prepare from 38 lbs. to 40 lbs. per day. The machine, also, that has been invented by Messrs. Fawcett & Co. is stated to be even a decided improvement upon the American saw-gin, so that every opportunity is now given to the growers of cotton in India to compete with the American market. The planters who have been engaged from the United States, are so engaged for five years, and their experiments are to be carried out on a most extensive scale. There can be no doubt that with such a wealthy body as the Lords of Leadenhall street—the East India Company—to back and support them through all their endeavors, something will now be done.

Bearing upon this subject, though partially, is the meeting held on the 27th at Manchester for establishing the "Northern Central British India

Society." The celebrated Mr. George Thompson* has been instrumental in getting up the steam on this occasion, and "Charles Lennox Redmond, a gentleman of color, anti-slavery debater from Pennsylvania," was paraded upon the platform. The chairman declared that the object of the meeting was to aim a deadly blow at slavery, and to transfer our market from the slave grower of cotton in America, to the free grower of British India. The principal speakers were Mr. Thompson and Mr. O'Connell, and the latter came from Ireland expressly to attend the meeting. Mr. Thompson declared that there was no measure so calculated to effect the downfall of slavery in the United States, as by encouraging the growth of cotton by free labor. He instanced the superior cheapness of free labor over slave labor by the cultivation of indigo. Fifty years ago it was wholly supplied by slave labor, but now the slave grown indigo of the Carolinas and South America has been superseded, and the three millions of it which they imported into Europe has dwindled beneath an ounce.

In allusion to the part taken by the East India Company, which I have above described, Mr. Thompson declared that it was an event in history that could not be matched for two hundred years. Mr. O'Connell's speech was particularly remarkable, for it did not contain one single sentence of abuse against the south. It was confined entirely to a description of the atrocious tyranny exercised over India by the company, and demonstrating the miseries, privations, famines and death, which have been the melancholy consequences of their iron rule. J. W. G.

CURING AND STACKING FODDER.

From the Carolina Planter.

Mr. Editor:—Until last year, I was in the habit of curing my fodder wholly in the sun and putting it up in double stacks. This I call the old plan. The objections to it are, in the first place, that many of the leaves dry, crumble, and are lost, ere the stems and succulent portions are fit to be stacked. In the second place, that an intensely hot sun is hurtful to the fodder, that cured, in the shade being always the most fragrant and nutritious. It is the practice of the best English, French and Flemish farmers, in curing their hay, to expose it as little as possible to the sun. It is carried in dry, but it preserves its green color; and you see hay two or three years old in their market of so bright a green color, that we would scarcely conceive it to be cured; yet they are in the practice of preserving it for years, and value it more for its age.—Cured in this way, scarcely a leaf is wasted and the hay preserves its freshness and fragrance; and it is said that at least ten per cent is gained in quantity, and as much in quality. A third objection to the old plan is, that the fodder is more liable to the seriously injured by dews and rain; and the fact is, in a season like this, when we have had rains almost every day, if we are to depend upon curing our fodder wholly in the sun, we shall not have one good stack in ten. If therefore, we can fall upon a plan by which we can make better fodder and with less sunshine, we shall of course, be running less risk, and stand a better chance of getting in that part of the crop. With this view, I have the fodder that is pulled in the forenoon; stacked in the evening of the same day, provided there has been no rain about it. If it is wet, I allow it to become perfectly dry before it is stacked; and my plan of stacking is simply this:

A pole is placed in the ground, at the spot where you intend to stack. Four other poles, or fence rails, if your stacks be small, are placed around the centre pole about a foot or more from the bottom, and then all tied together at the top, with a grape-vine or any thing handy, forming a cone. Place some brush or a few rails at the bottom, so as to raise the fodder a little off the ground. Then commence laying your fodder in *single bundles* around this cone, and when you have finished, it will be a *hollow stack*. The air having free passage underneath the stack, will circulate in the hollow, and the fodder will finish curing *in the shade* and unexposed to the weather. You may cure and stack pea vines in the same way.

For this improvement, as I conceive it to be, I am indebted to an old agricultural friend who has had forty years' experience in planting, and who had all his life followed the "good old way" of curing and stacking fodder, until about two years ago he happened to learn from an *agricultural paper*, not an "*old negro*," that the best mode of curing hay, &c., was to expose it but little to the sun, he conceived his plan of stacking fodder so as to have it cured partly in the shade. He has adopted the plan for the last two years, and thinks he makes better fodder by it, and certainly runs less risk of weather. I have also had my fodder stacked in the same way, and am much pleased with the plan; and I now send it to you to make "*book knowledge*" of it. FŒNUM.

INDEPENDENCE.

From the Journal of Commerce.

Scarcely any thing is more desired, or more misunderstood, than independence. When a man has acquired a great amount of property, and has a great number of tenants and clerks and servants, and above all a vast circle of fashionable acquaintances, so that the keeping of his happiness is in a thousand hands, from some one of which he is always suffering, then he is called independently rich. He cannot appear abroad without the help of a retinue, nor then but on condition of being dressed exactly so, and conforming without scruple to all the follies and sins which the fashion of his class decrees—all for the sake of being independent.

In judging of independence in others, men commonly take themselves as the standard. They deem all other men who think and act as they do, independent. Thus a politician, so long as he adheres to the opposite party, is a slave to party discipline, to bribery, corruption, the possession or the hope of office. But so soon as he comes over to our side, he instantly shows that he is a man of sterling independence. He has broken the

* The English missionary abolitionist, who made a figure in the United States a few years ago.—ED. FAR. REG.

shackles of party, which his generous spirit could no longer brook. Men love independence in themselves, and think they admire it in others. Above all they admire it in an editor. An independent press is the *beau ideal*, the beautiful thing, of their admiration. Especially in a free country and among an intelligent and moral people, every body says the press should be independent. Yet how few there are who mean by this any thing but a press which will reiterate just what they themselves think and believe. To be unconvinced by arguments which are so convincing, and to differ in opinion from men so universally in the right as themselves, is a kind of independence which few men will endure. They cannot understand how any can be so perverse as to differ from them, except under the influence of some bank or other hot-spring of corruption. There is nothing about which men desire an independent press so much as in politics; and there is no topic on which they bear independence so poorly. About these matters there is nothing excites more anger than simple statements of well authenticated facts. Even some good men get so becrazed, that although they will labor industriously and give their money freely to support and spread the truth in other departments, they will not consent to have a newspaper about their premises unless it will repeat all the falsehoods, vituperation and personal blackguard of the party press.

Bonaparte wrote to his wife very truly, "There are no such slaves as we." So it is generally. The higher men rise in authority as it is called, the more completely are they subject to the control of those whom they govern. The more they succeed in the accumulation of money or power, the more they render themselves dependent. True independence is best secured in narrow circles, by prudence, industry, and integrity, and a generous distribution of surplus possessions to supply the deficiencies of others.

"SHIPPED IN GOOD ORDER AND WELL CONDITIONED."

From the Alexandria Gazette.

The following remnant of the early times, when women were willing to get married, and not ashamed to own it, is a letter accompanying a shipment of marriageable ladies, made from England to the colony in Virginia. It is dated,—

London, August 21, 1621.

"We send you a ship; one widow and eleven maids, for wives of the people of Virginia: there hath been especial care had in the choice of them, for there hath not one of them been received but upon good commendations.

"In case they cannot be presently married, we desire that they may be put with several householders that have wives, until they can be provided with husbands. There are nearly fifty more that are shortly to come, and are sent by our Hon. Lord and Treasurer, the Earl of Southampton, and certain worthy gentlemen, who, taking into consideration that the plantation can never flourish till families be planted, and the respect of wives and children for their people on the soil, therefore having given this fair beginning; reimbursing of whose charges, it is ordered that every man that marries them, give one hundred and twenty pounds of best leaf tobacco for each of them.

"We desire that the marriage be free, according to nature, and we would not have those maids deceived and marry to servants; but only to such freemen or tenants as have means to maintain them. We pray you, therefore, to be fathers of them in this business, not enforcing them to marry against their wills."

MANURES.

From the New England Farmer.

Experiments are reported as having been recently made in England with saltpetre, with much success. In the cases referred to it was applied to wheat but its application to other crops has proved equally favorable and encouraging. It is not a new experiment. We know several cases in this country of its successful application, of which we shall speak hereafter; but we shall give the experiment now referred to in detail, because it seems to have been made with considerable care, and its results are professedly given with exactness.

The Harleston (England) Farmers' Club put it to their members as a subject of the highest moment, to make exact observation and experiments with various manures. Certainly no matter connected with the improvement of agriculture can be of more importance.—At a recent meeting the subject of saltpetre was discussed. Various experiments were reported. We select one of the strongest cases, they say, "the application of saltpetre as a top-dressing to wheat after pease, on a light land with a gravelly subsoil."

"One hundred weight per acre was sown by hand on the 6th of April, and to prevent any error which might have arisen from a difference in soil of one side of the field from another, the saltpetre was carefully applied on every two alternate ridges. The two crops were reaped, stacked, and thrashed separately; and the result was an increase of six bushels of wheat, and upwards of two and a half hundred of straw per acre, obtained at an outlay of 27s. sterling only, as follows:

	St.	*lb.*
Produce per acre of wheat which had been manured with saltpetre,	160	2¼
Produce without saltpetre,	133	12½
Increase,	26	4

	Cwt.	*St.*	*lb.*
Produce per acre of straw with saltpetre,	23	4	13
" " " without saltpetre,	20	7	8
Increase	2	5	5

Cost of the saltpetre was 27s. sterling per cwt. The wheat of course was winter wheat, and it was sown broadcast. A stone is 14 lbs.

The society proceed to report:—"It is the unanimous opinion of this meeting, that saltpetre is a most valuable addition to our list of manures. Strong evidence has been given of the benefits conferred by it on wheat, clover, and other layers, and tares on light land; and on clover layers on heavy land: in each case the saltpetre was applied in the month of April, and at the rate of one hundred weight per acre. The effect would probably be increased (but this is at present unsupported by

evidence) by applying only half the quantity of saltpetre at first, and the remaining part a few weeks afterwards."

The experiments which have come under our own observation, have been upon grass and wheat. The effect upon grass was quite remarkable. The wheat was in a growing state; the saltpetre applied when six inches in height; the quantity per acre not noted; the difference between the part not dressed with saltpetre and that to which it was applied was obvious and striking; the wheat was then in flower; it was intended that the result should be accurately observed; and we hope presently to be put in possession of it.

Any person of common observation, and at all interested in such subjects, cannot fail to observe the immense quantities of manure which are absolutely thrown away on our farms, in our cities, and about our roads and buildings. What a blessing it would be, if we had something of the reported frugality of the Chinese, on the score of cleanliness and health, as well as interest. How few of farmers ever think of saving their soap suds. We fear, without meaning any reproach upon the gude housewives, that some of them do not hear of such a thing as soap suds as often as might be useful! But how few ever think of saving and applying it; and yet it is a most valuable manure; and by having a vault or pool in which to deposite a pile of loam, or large heap of earth, by regularly throwing the contents of the wash tub upon it, might be converted into the means of greatly enriching the land; and what tuns upon tuns of the most valuable liquid manure, by a little pains-taking and contrivance, might be obtained in the city, by farmers, who are now willing to come four and six miles and transport fire-fanged and dried horse manure at a cost, before it reaches their farms, of six and eight dollars a cord.

The French are now taking great pains to save the water in which the wool is washed at the woollen factories, full as it is of soap and animal oil, and find it a most valuable application to their lands. We have long known the value of the refuse wool; and we have stood by the mill-shute in Lowell more than once with feelings of serious regret, when we have seen the wash from their woollen factory, full of enriching matters, mingling with the waters of the river and passing off into the ocean, as so much valuable material absolutely thrown away.

Our highly respected friend Bement, of Albany, has made some very successful experiments with hogs' bristles, applied in this potato hills and in other forms. He speaks of their beneficial effects as quite remarkable; and we promise ourselves the pleasure of hearing from him on this and the use of various other manures, in which he has been experimenting. We can confidently rely upon his observations and experiments as intelligent and exact; and the results which he gives under his own hand, as certain. H. C.

EXTRANEOUS MANURES—NITRATE OF SODA.

From the British Farmers' Magazine.

It is reported, that a remark was made by Lord Kames, 90 years ago, that such improvements would be made in agricultural chemistry, that sufficient manure for an acre would one day be carried in a man's coat pocket; and that a trite answer was made to the remark, that the produce from such manuring would then be brought away in the waist-coat pocket. Now, although this period has not yet arrived, yet something approaching to the small quantity of manure necessary to give vigor to an acre of wheat, has been proved on Guilford Downs during the past year; not that this kind of manure alone was taken up by the crop, but that it formed a great stimulator to the extra growth there cannot be a doubt; bringing into activity probably some latent manures lying in the ground; for a strong alkali will convert oleaginous matters into saponaceous consistency, and in that state becomes soluble in water: hence it is taken up by the spongelets of the roots in a liquid state. Those persons who consider quantity necessary in manuring ground are sadly mistaken, intimate mixture with the soil, and capability of becoming readily soluble, being necessary points for consideration. In March, 1839, Mr. John Ryds, bailiff to Frederick Mangles, Esq., of Down Farm, Guilford dressed over many acres of wheat with 1 1-2 cwt. of nitrate of soda to the acre, leaving about half an acre in the middle of the field undressed. The difference in the color of the wheat was seen in the course of 10 days; when nearly ripe, the straw had the appearance of being 9 or 10 inches longer than the other part, and much stronger; at reaping seven rods of each part were measured, cut, and kept separate; the nitred part produced 24 sheaves containing 11 gallons of wheat and 54 lbs. of straw; and where the seven rods were not so dressed, the produce was 16 sheaves, containing 6 1-2 gallons of wheat and 40 lbs. of straw.

A BOTTOMLESS LAKE.

From the New England Farmer.

A writer in the Troy (N. Y.) Mail, gives the following account of a remarkable pond in Sussex county, in the state of New York.

"White Lake is situated about one mile west of the Paulius Kill, in the town of Stillwater. It is nearly circular. It has no visible inlet, but its outlet is a never falling stream, of considerable magnitude. The name is derived from its appearance. Viewed from a little distance it seems of a milky whiteness, except a few rods in the centre, which by the contrast appears perfectly black. The appearance itself is singular enough, but the cause is still more remarkable.

From the centre or dark portion of the lake, at stated seasons, innumerable quantities of shells are thrown up, of various sizes and forms, but all perfectly white. These float to the shore, and are thrown upon the beach, or sink into shallow water. Hundreds of bushels might be gathered from the shore after one of these periodical up-risings; and the whole soil for several rods on every side of the lake, is composed of these shells, broken or decomposed by the action of the weather. In the centre of the lake, bottom has never been found, although it has been sounded to the depth of several hundred feet.

Where then is the grand deposite from which has been swelling up since the memory of man, these countless myriads of untenanted shells? Is

it possible that though far remote at an elevation of several hundred feet above them, this bottomless well may, by some subterranean communication, be connected with the grand shell marl deposite in the eastern part of the state?"

EXTRACTS FROM "OBSERVATIONS ON THE CULTURE OF SILK.

By the late Archibald Stephenson, Esq. of Mongreenan, in Ayrshire."

From the Technical Repository.

Having resided for five years in the provinces of Languedoc and Quercy, in the south of France, where the utmost attention is paid to the culture of silk; I embraced that opportunity of observing with care, the manner in which this lucrative branch of manufacture and commerce was carried on: and indeed, I was led to bestow the more attention upon this important subject, from an idea I entertained that this valuable culture, by proper care, might certainly be introduced into Great Britain, particularly in the southern parts of this island, where there are large tracts of land, which would answer perfectly for the production of the mulberry tree, and which, from the nature of the soil, can never be employed to any great advantage in raising of corn.

It appears proper to begin, by giving some little account of the mulberry tree, since, as the society justly observes, this is the first object which claims our attention; because we must first of all make some provision of food for the silk-worms, before any trial at large can be carried into execution with any propriety, or indeed, with any rational hope of success.

There are two kinds of the black mulberry tree which have been cultivated in France. The first of these bears a fruit well known and frequently presented at table, being the same which is cultivated in our gardens in the neighborhood of London. But the leaves of this tree have been found from experience, to be too harsh and too succulent to prove in every respect a proper food for the silk-worm, and the silk it yields turns out to be coarse and of an inferior quality.

The second kind of the black mulberry tree carries a fruit inferior to the other in point of size, and improper for the table; but the leaf of it has been found to be superior to the first, as food for the silk-worm; and it is less harsh, less succulent and yields silk of a finer quality than the one first mentioned.

This second sort of the black mulberry is, in all probability, the particular kind, which is said to be at present cultivated in the kingdon of Valencia, in Spain, for the use of their silk-worms; and, indeed, many of their old plantations in France, consist of this sort. But their new plantations consist wholly of the white mulberry tree, hereafter to be mentioned, which is the only one they now cultivate in all their nursery grounds, for the use of their silk-worms; so far at least as I had occasion to see them.

There is a third sort, known by the name of the white mulberry, the leaf of which is more tender and less succulent than any of the other two, and has been found to produce silk of the finest and best quality.

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For a number of years after the culture of silk was introduced into France, the people were accustomed to employ the leaves of all the different kinds of mulberry trees before mentioned, promiscuously; and some grafts of the white mulberry from Piedmont, and from Spain, which carried a larger leaf than the one they had got in France, having been obtained from these countries; these grafts were put upon French seedling stocks, which had the effect of increasing greatly the size of the leaves, and was regarded as an acquisition as it certainly produced a large stock of leaves as food for the worms. The consequence of which was, that this practice of grafting prevailed for a great many years all over Provence and Languedoc.

But Monsieur Marteloy, a physician at Montpellier, who had made the culture of the silk-worm his particular study for a number of years together, at last made it clearly apparent to the conviction of every body, by a regular course of attentive and well-conducted experiments, that the leaf of the seedling white mulberry was the food of all others the best for this valuable insect; as the worms which were fed with this particular leaf were found to be more healthy and vigorous, and less subject to diseases of any kind than those that were fed upon any of the other kinds of leaves above mentioned; and that their silk turned out to be of the very best quality. Since that time, namely, 1765, a decided preference has been given to this particular leaf beyond all the others.

* * * * *

I shall therefore go on to observe, that their first object is to make choice of a spot of ground for their seed bed, of a gravelly or sandy soil which has been in garden culture, or under tillage for some time, and which they know to be in good heart.

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From the experiments carried on by Monsieur Marteloy, that gentleman made it fully appear that the leaves of the trees which grew in a rich soil were by no means proper food for the silk worm, as they were too luxuriant and full of juice for them; and that the leaves of those trees which were raised in a gravelly or sandy soil, where no manure was employed, were greatly to be preferred.

From these experiments also, one of the reasons and apparently the principal one may now be pretty clearly pointed out, which rendered abortive the trials made in England, during the reigns of James I. and Charles II. for introducing the culture of silk into Great Britain; though that reason was altogether unknown in England, at the times these different trials were made. It appears to have been only this, that they had no other food to give to their worms but the leaves of the black mulberry, carrying the large fruit usually presented at our tables, which is now altogether rejected in France as an improper food for the worms; and which was rendered infinitely more destructive for these insects by the trees which produced them having been all of them reared in the richest ground in England, namely, in the garden grounds about London, which we know are in a manner yearly loaded with dung.

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Here it is proper to remark, that the second crop of leaves which come out upon the mulberry trees after having been stripped of their first leaves for the use of the silk-worm, are not allowed to fall of themselves in autumn. They are gathered for the second time with care, a little before the time they would fall naturally, and are given for food to their sheep, and eaten by them with greediness, and by that means turn out to good account to the farmer. Before the culture of silk was introduced into that part of Languedoc which is near to the mountains of Cevennes; the peasantry over all that neighborhood were miserably poor, as their soil, which is mostly gravel and sand, was incapable of carrying crops of any kind of grain whatever. But as it was found, upon trial, to answer remarkably well for the mulberry tree, the people entered with great alacrity into the culture of silk; and they have succeeded so well in that lucrative branch, that from having been amongst the poorest they are now more at their ease than most of the peasantry of that kingdom.

When I happened to be at Gange, which is within the district above mentioned, and which is remarkable for the manufacture of silk stockings, I was carried to see some mulberry trees, belonging to a farmer in the neighborhood of the village, which were the first that had been introduced into that part of the country. The trees were remarkably large and fine, and little inferior in point of size to our elm trees of the middling sort. The people who obligingly attended me to show me these favorite trees, assured me that a good many of the largest of them brought a return to the farmer's family of a Louis d'or each of them yearly.

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From the extension of the culture of silk over all the southern parts of France, there is a great increasing demand yearly for the mulberry leaves; so that they are now become as much an article of commerce as any other vegetable production; the peasants with eagerness buying them up annually with ready money at the proper season for the use of the silk-worms.

This last circumstance has given great encouragement to gentlemen of property to raise extensive plantations of mulberry trees upon their estates; as they bring in a certain and steady revenue, with little trouble or expense to the proprietor, after the trees have once passed the risk of being hurt by cattle. And this improvement is of the more consequence because the grounds that are found to be the fittest for production of the mulberry trees, which afford the best food for the silk worms, being gravel or sand, cannot be employed with any advantage in the raising of corn, more especially where the manures lie at a distance from them.

Grounds of the above description had formerly been in use to be planted with vines; but the returns from these were far from being equal to what is obtained from grounds of the same quality when planted with mulberry trees.—As an instance of this, I shall take the liberty of mentioning the following particulars, which I had from a gentleman, on whose veracity I am certain I could fully depend.

He told me there was a gentleman, a surgeon of Nismes, in Languedoc, who had a tract of very poor ground in that neighborhood left to him by his father; which, when it came into his possession, yielded him a rent of three hundred livres, which amounts in our money to twelve guineas and a half. As this gentleman observed that the culture of silk was extending itself rapidly over that part of the country, he planted the whole of his little property with white mulberry trees, the leaves of which, as his plantations advanced, he found he could regularly sell annually for ready money to the people in the town of Nismes and in the neighborhood, who employed themselves in the culture of silk; and my friend informed me, that these very grounds, after having been only sixteen years planted, gave a return to the proprietor of twelve hundred livres yearly; amounting to fifty guineas of our money. This improvement having been carried on under the eye of the neighboring heritors, several of them pursued the same plan with equal success; and some of them who had grounds of the same quality which had been long planted with vines, actually grubbed up their vineyards, and planted their grounds with the white mulberry; and here let me add, that the mulberry tree is long lived, there being many instances where they have stood perfectly good for above one hundred years.

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Here then I must observe, that the greatest care ought to be taken to procure healthy good seed or eggs, because it has been ascertained from repeated experience that the eggs from those houses where the worms were infected with bad air, carries along with it to the worms produced therefrom, the same distempers to which the worms of the preceding year were subject.

The eggs, in order to be properly preserved, should be kept in some dry place, with a free air, not too hot; and that you should avoid keeping them in any vault or cellar under ground; because any kind of damp is found to be destructive to them.

The eggs of the silk-worm have been found to degenerate in the space of five years; hence a change from time to time is judged to be necessary taking care to have the eggs brought from a warmer to a colder, climate. This, however, must be done by degrees, and not carried at once from one extreme to another. For example, eggs brought from the Levant, the isle of Cyprus, or from other countries of the same latitude, ought not to be brought at once into such a cold climate as that of Flanders, or the north of France; but should be first brought into such a climate as that of Provence or Languedoc, from whence, after having remained there for two years, it can be brought with safety into the colder countries.

The first year that the eggs are brought from a warm to a cold climate, you must not expect great success from them; on the contrary, you will find, though the utmost care and attention are given to them, that the greatest part of the worms will die. But still you will be able to save enough to stock yourself sufficiently with eggs, which every succeeding year will be found to answer better as the worms become naturalized to the climate, which can only be brought about gradually; and, indeed, more time will be requisite for this purpose in Britain than in France, as the climate upon the continent is more fixed and steady than with us in England.

In transporting the eggs from one country to

another, especially when this is done by sea, you must order them to be put into a bottle, which ought not to be filled more than half full, that the eggs might not lie too close together, which might run the risk of heating them, and causing them to hatch. The bottle being but half full, leaves sufficient room to the eggs to be tossed upside down, by the motion of the vessel, which keeps them cool and fresh, and hinders them from heating. After putting the eggs into the bottle, let it be carefully corked; a cover of leather put over the cork; and let that be sealed, to prevent any danger of damaging the eggs. When corked and sealed as above, put the bottle into a double case, or box of wood; not only to preserve the eggs from all damp from the sea, or otherways, but also to protect them from too much heat, which would cause them to hatch. If the bottle is too full, the eggs will lie too close upon one another, and will, in that case, heat of themselves, and hatch, and consequently in both cases must be lost.

The eggs that are duly impregnated by the male butterfly are of a gray cindery color, which color they preserve till they are properly prepared for hatching, as after-mentioned. The eggs which are not duly impregnated, are readily to be distinguished from this circumstance, namely, that after having been kept for some time, they always continue to be of a yellow color; and I need scarce add, that all such eggs are good for nothing, and ought, therefore, to be thrown away. There is no distinguishing between good and bad eggs, but by the change of color, after being kept for some time, as above-mentioned.

One ounce of eggs will produce 40,000 worms; and so in proportion, for a larger, or smaller quantity.

These things being premised, I shall now proceed to describe the method I observed to be used in France for hatching the worms. In order to avoid the loss which must necessarily follow, if the mulberry leaves should happen to be destroyed by frost, after you have begun to prepare your eggs, they reckon it advisable to divide them, and prepare them for hatching at two different times, at the distance of ten or twelve days, the one after the other.

The advancement of the season determines the time of preparing your eggs for hatching, as you proceed to that as soon as you observe that there is a prospect of having a sufficient quantity of food for your worms, by the advancement of the leaves of the mulberry. But in order to be properly prepared for this work, you must begin a month before the usual time of hatching; first, to put your eggs in little divisions, from half an ounce to an ounce, which you must place upon a piece of clean white paper, upon plates, for example; and put those plates containing the eggs in a place a little warmer than where you had kept them during the winter: for example, if you have an alcove bed, place them upon the shelf within the alcove. Let them remain in that situation for the first five or six days, after which, you must prepare some little chip boxes, perfectly clean and neat, seven inches long, four inches broad, and four inches high, and cover them on the inside with clean white paper, into which, put the different divisions of your eggs, having a small box for each division, and place these boxes in a basket, upon a stool or chair, at the foot of your bed; making one of the mattrasses of your bed go underneath the basket; and cover the basket on the top, first with some cover of woollen cloth, which pin close over it, and above that place a bed cover above all, so as to keep in the heat communicated by the mattrass to the eggs; in which situation, let them remain for six days longer; after which increase the heat to 14 degrees of Reaumur's thermometer,* preserving that heat equal, night and day, by means of a little fire in some corner of the room at a distance from the bed.

In the morning when you get up, put a heater of one kind or other: for example, a tin bottle with hot water, or a foot stove, into your bed betwixt the sheets, and proportion that heat so as to equal the heat you give to the bed, when you lie in it yourself; keeping up the same heat as nearly as you can, until you go to bed again yourself in the evening.

Having kept them in this situation for eight or nine days, you must then put your different divisions of eggs into little pieces of old linen cloth, which must be washed thoroughly clean for that purpose, as the least dirtiness in the cloth would prove prejudicial to the eggs; each piece of cloth should be of the size of a foot square: turn up the ends of the piece of cloth and tie them with a bit of thread, as near to the top or end as possible; by means of which the eggs will lie loose, and can be shook, and turned from time to time, without untying the knot: replace these packets in the basket, and cover them up as before, turning and shaking the seed in the packets three or four times a day that it may receive the heat equally.

On putting the eggs into these packets, increase the heat to 14½ degrees of the thermometer, and keep up that heat night and day as equally as possible; for which purpose, have a couple of thermometers in your room for your direction. After the eggs have remained in the little packets for three or four days, increase the heat to 15 degrees; and in four days more, if the weather seems settled, and very promising, increase the heat gradually to 16 degrees, visiting and turning the eggs from time to time as before.

When the eggs begin to turn white, and the mulberry trees are so far advanced as to be out of danger from cold winds, or slight degrees of frost, increase the heat gradually to 17½ degrees, or 18 degrees at most, to quicken the hatching of your eggs, and to make the worms come out as nearly at the same time as possible. But never increase the heat to more than 18 degrees, because a greater heat never fails to push the worms too fast, and to render them red at their first coming out.

When the worms are red at their first coming out it is a sign the eggs have either been bad, or ill kept over winter, or overheated; that is, too much forced when laid to hatch. Worms of this color are good for nothing, and are therefore to be thrown away, to avoid the expense of feeding them, since they will never produce cocoons.

When the worms are entirely black, upon their first appearance, it is a sign of their having been perfectly well managed, which gives great hopes of success.

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During the third age make use of the leaves

* Or about 59 degrees of Fahrenheit.

of such trees as have been planted out in the field, but reserve the leaves of your oldest trees for the fourth age, as these last leaves are reckoned the best for the worms when come to their maturity.

Be attentive to cleaning away the litter as before directed, which, during the third age, should be done at least four or five times; and take care to clear away, from time to time, all dead worms the moment you observe them: and to throw aside also regularly all such worms as appear to be diseased, to prevent them from infecting the rest, which will happen if this article is not pursued with the strictest attention. All the worms which you observe to grow of a yellow color, and to have their skin shining, are strongly diseased, and must be immediately thrown away, for fear of infecting the sound ones. These diseased worms sometimes void a yellow liquid at the tail, and it often also bursts out at other places of their bodies. These must always be attentively removed the moment they are observed; but it becomes more essentially necessary before the worms enter into their third sickness, because at this time they become most dangerous, by voiding the yellow liquid above mentioned, which is poisonous to the worms, and exceedingly contagious; insomuch, that every worm that happens to touch this liquid is sure to be infected with the same distemper, which has hitherto been found to be incurable.

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Upon the article of hatching the worms, it has been recommended to save the production of the first four days, as I observed this to be the general practice in France: but I must mention, that having met with a French gentleman at Montauban, who I understood had dedicated much of his attention to the culture of silk, and in which I was assured he had been particularly successful, I took the liberty, with a view to gain information, to request of him to favor me with an account of his method of management, with which he politely complied. By the account I received from him, I found the material difference betwixt this gentleman's management and the general practice consisted in the following particulars. He told me, that having long observed that the worms which were first hatched turned out always to be more healthy and vigorous than those which were later in coming out, he had for this reason adopted the following plan, which he had then followed for several years, and to which, in a great measure, he attributed his success.

If his intention was to raise a quantity of worms equal to two ounces of eggs, his practice was to put two ounces and a half of eggs to germinate, and to save no more than the production of the three first days; throwing away all the rest. He likewise made it a rule upon their passing through their different maladies, to take only the forward worms, throwing away regularly all those which remain long in getting over their maladies, and he gave the following reason for his continuing to follow this plan; namely, that from many years' experience, he said he had found, that those worms which are hatched after the third day always turn out to be weakly, and are tedious in all their operations. For the same reason he rejected all those worms which linger in getting over their maladies, which he said was owing to their weakness, or to their being infected in some measure with some disease, which generally carried them off before they could make their cocoons; or if they did get the length to make their cocoons, these last he maintained were so light, that they were not equal in value to the expense of the leaves which these worms will eat during their *grande fraize.* At getting over their different maladies, he saved only such as came away the first two days, throwing away all that were not ready at the close of the second day. From what observations I had myself made upon the silk-worm I thought this gentleman had a great deal of reason upon his side; but as, in every thing in relation to this culture, I uniformly made it a rule to satisfy my mind fully by experiment, I firmly resolved to submit his plan to that test. I was, however, disappointed in fulfilling my intention in that respect, by my having been obliged to return to Britain upon business before the next season of the silk culture came round. At the same time as I still continue to regard this article as a matter of great importance to that culture, I would humbly advise that it should be fully canvassed by experiment.

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In taking the cocoons off the brush-wood, pick them off carefully, especially if there are any dead worms amongst them, which presently corrupt; because such of the cocoons as touch these dead worms are spoiled by them, as they contract by that touch gluiness from the dead worms, which hinders the silk from winding off properly from the cocoon. The best manner to know the good from the bad cocoons, is to press them at the two ends with your fingers. If they resist well that pressure, and appear hard and firm betwixt your fingers, the cocoons are certainly good.

Though they appear firm upon pressing their sides with your fingers, they may still not be entirely good; the pressure at the two ends being of all others the best manner of knowing the good ones.

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ON DIGGING POTATOES.

From the Boston Cultivator.

Potatoes should be suffered to lie in the ground until they are fully ripe. There is nearly as much difference between a ripe potato and an unripe one as between a ripe apple and an unripe one. Unripe potatoes are uniformly watery, and are some of the most indigestible materials that we meet with. This is so much the case that the stomach has been often known to reject this article while it retained all the other materials admitted at the same time.

When we have not too much work for the month of October, it is more prudent to let our late potatoes lie until that time than to dig them earlier—and when we dig them if they are not wet we should never let them lie in the sun or in the air. Any loam reasonably moist may be allowed to adhere to them while they lie in the cellar, and we need not fear they will heat or rot as turnips will when put in a great heap where the air cannot have access to them. Turnips are of a nature different from potatoes, they grow principally above ground, while all potatoes that are worth saving grow wholly under ground. We

were once taught to dig our potatoes in the morning, throw them between the rows, and let them dry through most of the day—then to tilt them from the cart into the door yard to beat off all the dirt that might adhere to them. But experience has taught us that this is a branch of fancy farming, and will never answer for practical men.

When we lived on the Kennebec river and sent up loads of potatoes to the Boston market, we often wondered that our Boston friends were not as fond of the Kennebec potato as ourselves—but on attempting to eat in Boston some of the same potatoes we had sent there we soon perceived the great difference between a Kennebec potato in Boston and a Kennebec potato at home. Our potatoes had been too much exposed to the air, and though they had not turned green, as they will do when exposed in the sun, they were spoiled by exposure.

Our Kennebec and Penobscot friends should pack up in tight casks all potatoes sent off to customers whom they expect to trade with a second time—and if perfectly tight casks cannot be obtained, loam or sand may be filled into flour barrels with the potatoes, and the cost of transportation to Boston by water will not be increased by the filling.

A part of the labor of harvesting potatoes is severe and requires a strong arm; the soil lies heavy about them and the hand hoe must be used with much more vigor than is required in tilling the ground, in order to disengage them from their bed. A plough, constructed in such a manner as not to cut the potato would save a great deal of hard labor. The plough should have a dull coulter which should slope back at an angle of forty-five degrees; and it might also have a double mould board. This plough would loosen up all the earth about the potatoes, in land free from stones and stumps, and most of the potatoes would lie on the surface—the remainder would soon be discovered by the prong hoe.

Some ploughs of this description—or near it—were here exhibited at the fair last season. We hope some of our ingenious farmers who raise many potatoes for market will try a plough of this description and let us know how it works.

MODE OF HARVESTING BUCKWHEAT.

From the Cultivator.

Mr. E. Freeman, of Framingham, has raised a beautiful field of buckwheat on some of his lightest, poorest land. In April he sowed this land with a bushel of rye to the acre, and in the last of June he buried all this rye with his plough, using a foot in the beam, and a cross bar at the bottom of the foot to lay the rye straw flat, so that it might be buried in the furrow. He sowed buckwheat, one bushel to the acre, and it was his intention to plough in the buckwheat straw in August as he had done the rye, but when he saw what a harvest of buckwheat he might have, he hesitated about turning it into manure. On seeing it, our advice was to save the grain, and keep the same field for buckwheat for next summer, as the land is not suitable for large crops of grass, being too light and porous to hold either moisture or manure.

Mr. F. concluded to take that course, and he began to harvest his wheat by mowing it with a common scythe. Afterwards he engaged a man to cut it with a grain cradle—it was thus laid in gavels like rye or oats—without suffering it to lie long in the gavel, he raked it into heaps of the size of common bundles, and then—*without binding*—he set these bundles on end to let the tops dry, and the beards of the grain held the whole bundle together sufficiently strong to keep the grain from the ground.

It was Mr. Freeman's calculation to let these bundles stand two or three days, then cart them and thrash out the grain immediately, before it should gather any moisture from the straw. And we are inclined to think this is the best mode of harvesting this valuable grain. If we mow it with a common scythe, we must rake over the whole ground, and the grain shells out so easily, we lose some every time we stir it—these bundles stand up so well they need not be moved or stirred until they are dry enough to be carted, and they need to be moved but once. No binding or unbinding is necessary, and the expense of harvesting is not half so great as the harvesting of common wheat. Mr. Freeman will probably have thirty bushels of buckwheat to the acre.

POTATO GROUND FOR NEXT SEASON.

From the Cultivator.

The potato has become an indispensable article for the table, and no pains should be spared to grow the article in the best manner, and at as little cost as may be. And the very unequal quantities which we often see harvested in fields that are to all appearance equally rich, demands some of our attention to inquire into the cause of this difference. All will agree that soils naturally light, or made so by means of manures, furnish the best bed for the growth of the potato. Cultivators take different methods to produce this lightness in the soil, but most of them who have no new ground, (which always lies lighter than old,) to plant with potatoes, place a shovel full or a fork full of manure in the hill with the seed potatoes, and in case of a dry summer the harvest will often prove less than if no manure were used! And then the land is scarcely any better by the application, for the next season.

You may generally have *vines* in abundance by placing manure in the hill, but good bottoms are more important than large tops, and our calculations should be made accordingly. Now we find that no soil will lie so light through the summer as green sward will—but if the sward is turned in the spring, and is then planted with potatoes, it does not become mellow in season to give them a good bed—it is also in most cases more dry than it should be for this article. We propose to our friends who never tried the experiment, to turn over some green sward in October, before all the grass is fed off, and see if they will not have a better bed for their potatoes than they can otherwise make—if straw or old meadow hay is ploughed in, it will not vitiate the soil, and it may help the crops. We once tried this experiment—we ploughed our ground about the middle of October, and in the spring we did nothing but

harrow it well—planted our seed—threw a spoonful of plaster on each hill—and hoed our potatoes once; and without hilling up more than half an inch—without any manure we raised the largest crop of potatoes that we ever harvested. The land was more light through the summer than we could make it by means of manure.

CUTTING AND PREPARING HEMP FOR MARKET—WITH ITS PRICES FOR THE LAST EIGHT YEARS.

From the Southern Cultivator.

Dear Sir :—Some remarks having been made in a former No. of your paper, in regard to the growing, or primarily, to cutting of hemp, I feel at liberty to extend those remarks, and say something about the time when hemp should be cut, and how and when it should be taken up, stacked, &c.

Observation seems to warrant the conclusion that well grown hemp should be cut and fully matured, and short grown, low, fine or poor land hemp should be cut before maturity. It is a fact clearly demonstrated to all common sense, that all vegetation, whether plants, roots, trees, or shrubs, as long as they are in a thrifty, growing condition, have not arrived to maturity or fulness—so of hemp. We should let hemp that is full grown, usual size and length, remain undisturbed until it has fully matured—it has then received all the nourishment and strength that nature gives, and undoubtedly should be cut at that period.

Short or poor land hemp, should not be permitted to remain to maturity. It is a well attested fact that such hemp is usually more difficult to water and get clean, than better grown hemp. The reason seems to be founded on this fact—the stalks are much smaller and more compact generally, and the lint of a much finer texture, closer grain, and of course better protected against the watering showers and dews. Now for the reason why it should be cut before maturity: I presume no one will doubt for a moment, that when matured, the sap has ceased to flow; that being the case, there is greater affinity for the stalk than before, and less susceptibility of an early maturity. When you cut before the sap has ceased to flow, you preclude that affinity for the stalk that it would otherwise have, and leave it susceptible of an early maturity. It is well understood that timber cut when the sap is flowing, will not endure as long as when otherwise cut. This I presume proves the point, that when cut before maturity it is sooner watered and much less labor required to clean it. The reason why the same argument will not apply profitably to well grown hemp, is to be found in the fact that when matured it carries more weight, while it is easier watered, from the fact of the stalks being more *porous*, and presenting at the same time more surface to the contracting influence of wet and cold--*saturation* and *freezing* —bursting loose from the stalk, smiling at the hope of an approximating deliverance from such low grounds, and claiming a rank among the dignitaries of the field.

When your hemp is cut, let it remain on the ground until it gets a rain on it.—There are several advantages resulting from this course. First, you get rid of the leaves that are found to be troublesome, (if you attempt to stack your hemp without first taking them off.) Next, it leaves your hemp in a condition to water much sooner than otherwise, (losing some chemical property.) When soon watered, it cleans easier—in fact you may lay it down as a settled maxim, that when your hemp is hard to water, that it will be difficult to clean; hence the necessity of the utmost precaution and vigilance at this stage of your crop.

Next in order of saving your crop comes stacking. There are several reasons for this. Hemp when cut has nothing to lose; its troublesome roots are improving your soil, and what you have left will be wanted to protect against the beam of a summer's sun, and ravages of an autumnal storm. To do this, you must put it up in large stacks, upon the same principle you would wheat, rye or flax, excepting you keep the sides of your stack perpendicular until you get it high enough, then let your last course on the top extend over about 12 or 14 inches, to give eave that the ends of your hemp may be protected against the dripping—protection at this time being the order of the day—cap well, and all will be well.

As early in the fall as the heavy frosts and frequent rains commence, you may spread out your hemp; when watered sufficiently, take up, break out, and send to market, and my word for it you will carry home a heavier purse than either cotton or corn will award you. I have been at some pains to ascertain the average price of hemp in Middle Tennessee the last eight or nine years. I find that from the most authentic sources *compared*, we have the average of $6 25 per hundred pounds for the last eight years in Maury county; while that of Kentucky is reckoned at $5. In Maury county, in the year 1833, hemp was worth $5 per hundred pounds; 1834, $5; 1835, $9; 1836, $7; 1837, $6,50; 1838, $6; 1839, $5,50; in 1840, $6--thus giving the mean or average price of $6 25. From the best sources, I learn that cotton grown in Middle Tennessee, has, since perhaps as far back as 1799, been gradually decreasing—commanding in that year an average of 44 cents. In 1840, 6¼ cents. I admit that it is owing perhaps to circumstances with which we are surrounded at the present time, that cotton commands such a pitiful price, (circumstances which will perhaps not occur again in half a century;) yet for the last twenty years, the average price has been about 9 cents for Tennessee cotton at the gin. "The average annual product of lands in Middle Tennesse is believed to approximate to 200 lbs. clean cotton to the acre." Thus taking the average product of one acre of cotton, we have 200 lbs. at 9 cts.--$18; deduct for 15 days' labor, which amount is thought to be a fair average on one acre, at 50 cts. per day—we have the sum of $10,50 as profit, or proceeds. Taking hemp, we find that a fair average annual product to be about 500 lbs. clean hemp to the acre—which at $6,25, gives us the sum of $31,25 —deduct for labor 10 days, and superior land $2 —we have the sum of $24,25 proceeds. Showing a balance in favor of hemp of $13,75. Exactness in these calculations is not to be expected, but a fair calculation has been aimed at. G.

Columbia Sept. 3, 1840.

RAIL-ROADS IN THE UNITED STATES.

The Journal of the Franklin Institute contains a detailed account of the rail-roads in a number of the states, with the length, costs, &c., from the tables of which the National Gazette gives the following: In Pennsylvania, the number of rail-roads are thirty-six, the number of miles opened five hundred and seventy-six and a half, the total length of road eight hundred and fifty miles and a quarter, and the amount already expended $15,640,450. In Virginia, the Carolinas, Georgia and Florida, there are twenty-three roads, and nine hundred and ninety-four miles opened; total length, sixteen hundred and seventy-five miles and a half. Amount expended, $18,442,000. In Alabama, Louisiana, Mississippi, Tennessee and Kentucky, there are twenty-seven roads, one hundred and ninety-five miles in operation; total length of roads, eleven hundred and forty-eight miles and a quarter. Already expended, $9,-621,000. In Ohio, Indiana, Michigan and Illinois there are twenty-nine roads, one hundred and ninety-six miles in operation; total length of roads, two thousand eight hundred and twenty-one miles and a half. Amount expended, $5,523,640.

WILD DOGS OF VAN DIEMEN LAND.

From the Penny Magazine.

The annoyance and danger occasioned by the wild dogs in Van Diemen's Land is still a subject of great complaint in the papers of that colony; and the most active exertions hitherto used, seem to have had little effect in abating the nuisance. The dogs appear rather to increase in number and boldness. A case is mentioned, in which a person named Akerley was assaulted by thirteen of these animals, and would probably have been killed if he had not contrived to get up into a tree. The means hitherto employed to eradicate them do not seem to have been commensurate with the growth of the evil. A society has been established at Gaddesden, near Campbell Town, to effect their destruction; and the house of the chairman exhibits a collection of skins, to the number of a hundred, of dogs that have been killed, of almost all kinds, from the shepherd dog to the Newfoundland. It is thought that unless the most decided measures are taken, it will be impossible to pasture sheep in the colony. The dogs bring forth six or eight young at a litter, and commence breeding at one year old, while the sheep brings forth only one, and does not commence breeding until two years of age.—The ultimate and discouraging prospect which this opens, is brought nearer by the daily defection of the domestic dogs of the colony to the wild ones. "At the remote stock-hunts," says a recent paper, "a free man keeps as many dogs as he pleases; frequently six or eight are kept; these dogs provide for themselves, and continually make off to the wild packs. All remonstrance is received with a smile of contempt, and returned by insult; and until such people are strictly prohibited from keeping dogs in the pastoral districts under heavy penalties, matters are not likely to mend: indeed it is to be feared that the evil is fixed for ever—that it has been too long neglected, and is now past remedy." We are too well assured of the resources and power of civilized men to partake of these apprehensions; but any delay now in organizing a plan of simultaneous operation against the dogs, is likely to render their future extirpation a matter of great and increasing difficulty and expense. Meanwhile, at this distance from the spot, it is interesting to watch the various aspects in which this remarkable state of things appears, and to observe the different measures which it may be necessary to adopt against the canine depredators. Since writing the above, we find that an "Act of Council" has been issued for the purpose of restraining the increase of dogs. All dogs are to be registered; and none are to be left at large except in Hobart town and Launceston. Unregistered dogs, or dogs found at large contrary to this order, are to be killed. The persons killing them are to be paid from 5s. to 40s. each, out of a fund formed by the registration fees.—The registration fee for a watch-dog kept chained, or a sheep-dog, is 2s. 6d.; all other dogs 10s. or if females double the respective amounts. The local newspapers are not very sanguine in expectations of good from this measure.

HEMP.

From the Southern Cultivator.

The growing of hemp is becoming of more importance annually to the farmers of Middle Tennessee, and especially to the citizens of Maury, Giles, and parts of Williamson and Davidson counties. Many farmers have been experimenting in these counties, for several years on a small scale; and so far as I have knowledge, they have uniformly resulted in the full conviction of the practicability of its being a crop every way adapted to the climate and soil, that pays the farmer larger annual profit than either cotton or the rearing of stock; whilst the growth and management of hemp, in those counties are at least a half century behind the growth of the same article 250 miles north of us, among the all-enterprising and industrious citizens of the middle and upper counties of far-famed Kentucky. And I think that it is a duty we owe to our county, country and state, (having the soil and laborers in abundance,) to awaken to the acknowledged importance of the cultivation of hemp. The pecuniary and embarrassed condition of our once prosperous and happy country demands that the energy, industry, and ingenuity of every man should be brought into action to improve and circulate widely every item of our knowledge of the growth of every article that can be grown in our country, for consumption or export, (that pays well for labor,) that we may as much as possible conceal our large importing debts, and stand out boldly against all the reverses of the times.

The cultivation of hemp, in the counties above mentioned, should not be second in importance to any. The advantages of soil and climate, our contiguity to the cotton growing states, give us an advantage over all other hemp growing districts, (Kentucky being the nearest) of 25 per cent. at least—having 250 miles in advance of the best bagging and rope market in the United States, to say nothing of the comparative low price of our

land, and consequently less capital invested. These conveniences to market will always give us a decided advantage over our neighbor states, in proportion to the cost of transportation from the hemp growing districts. Having an acquaintance with the soil suitable to the growth of this article—hemp, I feel it a duty I owe to my fellow citizens to invest my knowledge as common stock. I shall make only some general remarks in regard to the capacity of the soil of the counties I have named for growing hemp, believing that those who grow the article are not in serious errors in regard to the quality of the soil best adapted, or the preparation of it for the reception of the seed—but after it has matured, or in other words, ready for pulling.

It is the practice of the hemp grower in Kentucky—the principal hemp growing state in the union—to cut their hemp instead of pulling it up by the roots. After having experimented for 20 years, taxing their ingenuity for the invention of some implement by which the labor of pulling, breaking, and cleaning should be reduced, it now seems to be a point settled with them to cut their hemp with an improved hook, called the drag hook, thereby reducing the labor, and making it convenient for every man to raise hemp however small his force. It is thought by a very respectable portion of the hemp growers in this country, that the advantageous management of this article is confined to stout, able-bodied men. This opinion was also held by the Kentuckians a few years since. But it is not now so much so. The cutting of hemp lessens the labor. First, for cutting, you can, if you have a good season for sowing, put your seed in with a large harrow—it leaving the ground smooth which should never be omitted; for pulling, you must plough your ground and leave it furrowed, if you wish it to pull easy—season or no season—which requires more time and labor.

Secondly—To cut it does not require the same amount of strength to perform a given quantity of labor, unless it is on very fresh land and quite loose soil—and in that case you make by cutting, because the weight and troublesome part of the stalk is cut off and left to enrich the soil—which part prevents also the curing and rotting so readily.

When cut, it comes in half the time, stacks with half the labor, can be spread more regular and even with less labor, and does not require the same quantity of rain and dew to rot it. When cut, the pores or hollow of every stalk, however small, are left exposed to the first dews and rains, and very often the lint on the stalk is dry and the stalk decomposing rapidly, from the fact of its having become saturated by means of the exposition of the hollow of the stalks. The stalk loses its affinity for the lint—it is yet bright and glossy, and but little injured by exposure to the weather. When you go to break your hemp, you are not troubled with those half rotted roots which are consequently attached to every stalk that is pulled and in getting off of which you lose more time, and indeed more lint, than you lose by cutting some two or three inches above the ground—which should never be the case, but close to the surface; hence the reason why the Kentuckians break and clean so much per day—200 lbs. being quite a common day's work, where they are in the habit of cutting! while half that number of pounds, in our country, is considered a good day's work, and the article not so good or saleable as that of our neighbors. In conclusion, I need only appeal to the judgment and experience of the two countries—Kentucky and Tennessee—to warrant all I have said on these matters.

There is yet in the minds of many of our fellow-citizens an objection—a seeming objection—to raising hemp, which I would beg leave to offer a few remarks upon—that is, "we would raise hemp if we could get a market for it." It is necessary that we should profit some by the experience of others. If the Kentuckian and Russian growers had urged this same objection, they would yet have been in a wilderness; but their industry and intelligence outstripped all opposition as soon as they found they had the soil and the climate suitable for growing hemp. And if we would make the growing of hemp of importance among us and make a good article and in sufficient quantity, manufactories would soon spring up—the inducements would warrant a preparation for it; as it is, manufacturers are afraid, with perhaps one year plenty of the hemp and the next not any. If our farmers would interest themselves as much in the growth and management of hemp as they do in the rearing fine horses and hogs, I would insure them equal advantages of product and market with every other hemp growing state in this union.

A specimen of the most improved hemp hook can be seen at the office of the Cultivator. I would recommend the use of it by all who feel an interest in these matters.

Respectfully, GEO. W. MCQUIDDY.

WOBURN HOGS.

Extract from a letter from Dr. Samuel D. Martin, of Kentucky, to the Editor of the Southern Cultivator, dated—

Colbyville, Aug. 18, 1840.

The Woburn hogs are of great length, large size round the body, legs of medium length, (the hind legs generally a little longer than fore legs,) well tapered down to the foot—stand well and straight upon the leg and foot. The head is small for the size of the hog, with small ears, generally erect, though many of them have their ears to drop a little. The prevailing color is spotted with white and black; many are brown and black. They come early to maturity, fatten easily; travel well, are productive in pigs if not kept too fat—gentle and well disposed, not disposed to be restless, or to get out of enclosures where they are put. I have never known a Woburn sow to eat her pigs.

I could give you a great number of extraordinary weights; but where great weights have been obtained, it has generally been by extra keep and attention, and such instances are calculated to deceive those who read them. The heaviest hog I have had of this breed, was a boar that took the premium at Lexington, in 1837, that weighed 500 lbs. at fifteen months old. He had three months extra keep. He died at sixteen months old, and I believe he would have weighed 600 lbs., having gained about 100 lbs. a month for the two last months of his life. I have known but one sow killed, and she weighed net meat, 464 lbs.

I killed last fall about fifteen thousand weight of pork, most of which were pigs from six to eight months old. Two that were pigged the 23d of April, were killed on the 12th December, and weighed 187 and 224 lbs. net meat. These two were from a litter of ten, that the sow had raised, eight of which had been selected for breeders. My June pigs, killed at the same time, averaged 124 lbs. These are not given as extraordinary weights, but as samples of what this stock will do in the hands of any body that will take proper care of them. Enclosed you have a plate of one of my Woburn boars, which was taken when he was nine months old. This plate will serve to give a better idea of the formation of the Woburn hog than I could by description. Their bodies to the eye appear to be perfectly round; but measurement shows they are rather deepest from the back to the breast.

Besides the Woburn, I have the Berkshire, (black and white,) the Neapolitan, the Lancashire, the Irish, and have had most of the popular breeds. I have made many experiments to test the relative value of the different breeds, some of which have been detailed in the Franklin Farmer. My experiments have not been sufficiently varied and exact, to prove all that I wished to know concerning them, but as far as they have gone they have been decidedly in favor of the Woburn. I have also proposed, in the Franklin Farmer, making a more thorough test of the different hogs. An experiment was lately made in Jessamine county, Ky., by Isaac and William Barclay. They fed for thirty days, a Woburn and a Berkshire boar.—The Berkshire gained fifty-seven pounds, and the Woburn one hundred and seven pounds.

I have Berkshires of Haws and Lossing's importation, a description of which has been published in many of the agricultural papers.

I sent last year an order to England for four of the best hogs that could be procured, and my agent sent me the White Berkshire, the Neapolitan, the Lancashire, and the big white China. My white *improved Berkshire* was purchased at a price that would have purchased half a dozen black Berkshires. He has all the good qualities of the best of the black ones, and a size, and softness in feeling, which the black ones lack. His value must depend upon his breeding, and I am willing for time and experience to test this matter.

Yours, very respectfully,

SAMUEL. D. MARTIN.

OBSERVATIONS ON THE EXCRETORY POWERS OF PLANTS, &c.

From the British Farmers' Magazine.

The lately discovered doctrine of the excretory powers of the roots of plants, although it was rather startling to us, and slowly received at first, is now beginning to be embraced by the generality of scientific men. The doctrine being first adopted and promulgated by several leading men, about the same time in England as well as on the continent, gained for it a ready acceptance with many, who, however, had some difficulty in explaining and proving what they professed to believe. That the soil immediately in contact with the roots and other parts of the plant which grows in it, must receive some kind of taint, either by exudation, respiration, or other mode of discharge of its fluids, is perfectly feasible; and that this taint is appreciable by our senses, both of sight and scent, is undeniable. But whether this taint or discharge from the plant be *poisonous*, or only *useless* to plants of the same kind which succeed, is the question not yet clearly decided. Objectors insist that it is not what *is left* that is deleterious, but what is *taken away* which renders the soil less suitable to the second crop of the same kind. Every different species of plant, say they, selects its own peculiar kind of food, and therefore the second cannot find so much as the first, unless the exhausted plot be replenished with that of which it has been deprived. But the abettors of the exudation notion, say this is impossible; that no replenishment of even the richest dress will operate so as to make the second as good as the first crop. This is, perhaps, carrying the idea of excremental poisoning too far; because a farm may be so exhausted under a *regular rotation* of cropping, as to be at last unfit to bear any kind of crop until again visited by the dung cart. We often see in cottage gardens onions and cabbages repeatedly grown on the same spot, without any material falling off, provided the annual application of ashes and other sweepings about the house are bestowed to assist the crop.

It is quite possible, however, that one species of plant may be not only unhurt by the exuvia of another, but even thrive in it, as beans and wheat are known to do, alternating for many consecutive years. And, moreover, as beans, drilled and properly labored by horse and hand hoes, are a cleansing crop, and if the drills of this year were to occupy the intervals of those of the last, it might be possible, as Tull used to say, to grow beans every year upon the same field; but this, for many reasons, would not be eligible, even if practicable.

But some of those who strenuously support the theory of Professor De Candolle, relative to the injurious ejectments of previous crops, not only insist on the validity of the professor's opinion, but maintain that it is consistent with a fixed law of nature, namely, that no plant is destined by nature to occupy constantly the same station. That they are constitutionally endowed with powers or tendencies by which they desert or fly from the place of their birth; as if by a kind of preception they knew that their parents had devoured all the food which they would require for themselves.

We have many instances of the progeny forsaking the mother; some seeds have parachute wings to fly away with; others are contained in seed vessels, which when acted upon by the heat of the sun, burst with such elastic force as to scatter the seeds to a considerable distance around. By many other means are seeds dispersed: by winds, by currents of water, by birds and other animals. But besides seeds, plants have other modes of increase or extension: witness the numerous offsets and suckers produced by many different sorts of plants. and all these take divergent directions, so that they should not rob the parent or be starved themselves. The strawberry plant is a familiar example of how far the living progeny depart from the mother's station before they fix themselves in the ground. To these instances a hundred others might be adduced; all which go to prove that plants are constitutionally inclined to a change of place. Trees, indeed, are fixed to one spot; but they are ever finding

fresh pasture by the extension of their leading roots, as is the case with all other perennial plants.

But, after all, the question recurs—is this diverging tendency a natural law of vegetation, or is it because antecedent production exhausts or poisons the soil, so as to render it unfit for the purposes of subsequent production?

We know that newly broken up land, whatever its quality may be, is always more suitable to any crop than that of the same quality which has been long cultivated; showing that there is a *something* in maiden soil which is fugitive. What that something *is*, has never been discovered by practical men, nor has it been investigated by the chemist, though an object well worth the researches of science.

That the fertility of exhausted land may be renewed by additions of manure, is well known; and it seems that the dress restores that which has been abstracted by the previous crops; or, at least supplies a substitute. On the knowledge of this fact all our best systems of agriculture are founded; and whether land be exhausted or poisoned by previous cropping can make no difference in the culture, so that the rules of rotation, as established by long experience, are strictly attended to, and no cross-cropping pursued, unless for some manifest prospective advantage.

That a change of soil, and even a *change of air*, are beneficial to all kinds of terrestrial plants, are well confirmed facts; and nothing conduces so much to the advantage of the farmer as a frequent change of seed. Now, how a change of soil without its being of better quality, and especially, how a *change of air*, without reference to its temperature, can be so exciting and congenial to foreign or strange plants, is one of those mysteries in cultivation which we cannot readily fathom. It must be observed, however, that such effects are only seen between the fortieth and sixtieth parallels of latitude; because beyond those bounds an interchange would be too extreme; though there are some exceptions to this rule, for the Mazagan beans of Egypt do well in this country, and some native plants of Siberia do equally well in Britain. But the farmer's range in making such changes is confined to the seed of corn, grasses, potatoes, &c.; and next to obtaining clean seed of the *best varieties*, most suitable for his own land, is the procuring them from the most distant parts of the kingdom, or at least from some neighboring county.

REPORTING EXPERIMENTS WITH ARTIFICIAL MANURES.

From the British Farmers' Magazine.

In all our agricultural publications now issuing from the press, we see many accounts of experiments made for ascertaining the value of certain substances recommended as manures, either for top-dressing or ploughing in. Some of these accounts are elaborately, and, no doubt, faithfully written; and sometimes favorable, or, as it may happen, unfavorable. Sometimes, too, we are told of the same material having contrary effects on land of precisely the same character, especially if situated in distant parts of the kingdom. Now, these discrepancies may often arise from ignorance or want of consideration of the peculiar effect or action of the material employed.

Besides the various substances which have been used as manures from time immemorial, there are others, chiefly minerals, which are brought into use with various success. The reports of such trials are not always uniform; and defective in so far as the character of the weather or season following the application is omitted to be stated. In my own practice I have used soot extensively for top-dressing wheat, and have harrowed and rolled it in; but if a dry spring and summer followed, the soot was of no service. I have used chalk and lime as dressings for light gravelly land; but if a wet season succeeded, little or no immediate effect was observable. The same result followed the application of salt, on the same description of land, under the like circumstances of season. And the reason for the non-efficiency of these three last named substances was perfectly obvious: all three are ready absorbents of water from the air, and in dry seasons are eminently useful to growing crops; whereas, in a showery time, the crops need no such assistance.

Saltpetre and nitrate of soda are at present fashionable top-dressings; and those best acquainted with these substances affirm that they are often injudiciously used. On wet tenacious land they can never be so efficacious as on dry sandy or gravelly soils; nor in wet seasons so much as they certainly must be in dry. If I be not mistaken in attributing to them such effects, they will always be considered as doubtful fertilizers; because they must be used before it can be ascertained, except by conjecture, what sort of season is to follow.

Mr. Cuthbert Johnson observes, that "the agricultural uses of saltpetre have not been examined so carefully or generally as they ought to have been;" and G. Kimberley, Esq., of Trotsworth, "regrets that it has been hastily adopted, without reference, in many cases, to season, soil, climate or quantity; and as a few fortunate experiments have started into a fashion *the use* of these articles, so one or two unseasonable or improper applications have at once *condemned* them to neglect and oblivion."

Such reports show decidedly how necessary it is to know correctly the effects of those artificial manures; whether as the food of plants, or improvers of the staple; whether as exciters of vegetation or solvents of the nutritive matters already in the soil; and also under what circumstances of weather or season they are most active, or altogether neutral. These are questions for the agricultural chemist to prosecute; so that no farmer need work in the twilight, or be in doubt concerning the direct effects of any manure which comes recommended from competent authorities.

And in all future reports of experiments made with any of those uncommon articles of manure, the reporter should not omit to state what kind of weather has prevailed during the experiments; for the effects, especially of saline substances, are very much determined by the state of the weather.

J. MAIN.

[Our respected correspondent is right. Much of the success or otherwise of these, and many other manures we could name, must depend on peculiar circumstances of soil and season. We have heard saltpetre abused one year, and highly extolled in another; although tried on the same soil, the same description of crop, and by the same person.—ED.]

From the South Carolina Planter.

A GOOD WAY TO KEEP SWEET POTATOES IN WARM WEATHER.

Florida, 26th August, 1840.

I now have sweet potatoes, (yams,) of last year's growth, on my table every day, although the new crop has been fit to use here for more than a month. This is the second year of my success in keeping them through the summer, after a great many previous experiments and failures, and others may like to know and try the plan for themselves. Here it is.

1. I made a plentiful crop.

2. My potatoes were dug and put up in mild, open weather, as soon as the vines were singed by frost.

3. The eating potatoes were carefully picked over, and all that were cut or bruised, were put by themselves for early use.

4. They were then put up in heaps of 80 or 100 bushels each, on ground a little sloping. The heaps were covered first with a layer of dry corn stalks, and these with a good coat of earth, taken from the margin of the heaps. By this means the earth on which the heaps rested, was left 10 or 12 inches higher than that adjoining, besides cutting trenches to carry off the rain water. There were no air-holes or vents left at the top. The earth used in covering is a sandy loam. These potato banks were protected from rain by slight clap-board shelters.

5. In the spring, at the time of planting slips, my eating potatoes were also taken out of the banks. The decay up to that time was about 15 per cent. The potatoes were generally sprouted. Those that were entirely sound were selected, the sprouts carefully removed, the potatoes wiped dry, but not exposed to the sun, and removed to a log house, on a dry plank floor, where they remained for use, without any further attention. The loss from decay since they were put in the house, has been equal to about 10 per cent more. I think the loss would have been less, if there had been more room to spread out the potatoes. A gin-house would be a fine place to keep them in during the warm weather. For I have found that Irish potatoes can be kept there longer and better than in any other place I have tried.

As to *the best method of keeping sweet potatoes in winter* the following story may direct your attention to a quarter, from which you may obtain some useful information.

In the fall of 1833, I called at the house of J. G. near the Wateree canal. He had just put up his potato crop—chiefly in a house of the following construction. It had a double log wall, and the space between the walls (15 or 18 inches,) was filled with earth. The top or loft was floored with stout puncheons, and these covered over with clay 10 or 12 inches thick—above which there was a common board roof. The ground floor was sunk about two feet below the surface of the earth. The area of the house was about 8 feet wide, 8 feet high, and 16 feet long, which he computed to hold 800 bushels. It was entirely filled with potatoes.

What struck me most, was to see *the door (the only opening to the house,) closed up, and all the seams in the shutter and facings, carefully chinked up with cotton and tar*—if I remember right, Mr. G. gave the following explanation.—For two or three years, on first housing his potatoes, he was careful to have the door kept open until they had gone through a sweat—yet found that he often lost a third by dry rot. At length he was told that the air ought to be carefully kept out until the sweat was over. The truth of this was strongly confirmed to his mind, by the recollection that in using his potatoes he found that the farther they lay from the door the sounder they had kept. He added that he had preserved two crops on the new plan, with entire success—and that after the sweating stage was past, the door was often left open all day, in cold weather, without any sensible injury to the potatoes.

Would it not confer a public benefit, for you to learn if this plan continues successful, and give your readers the information? W.

"THE FULL-BRED BERKSHIRES."

[Some of the agricultural papers have for months back been full of communications and essays on improved breeds of live-stock, and especially of Berkshire hogs; which articles are, in fact, designed as advertisements, and are the most "taking" [in] kinds of advertisements (next to editorial puffs) of the sale stock of the several writers. The agricultural public, as usual, would have continued to be gulled by these writers, and taken all that each of them said for unquestionable truth, put forth purely and solely to benefit the public, but for the over-greediness of these gentlemen, who, not content each to publish that he has stock equal to the best in the world for sale, have each claimed (directly or by inference) that he alone has the real "Simon Pures," and that all others are no better than bastards, if not absolute counterfeits. We have been much amused with the progress of the controversy, which has waxed so warm as to threaten the occurrence of what may be called a war of the humbugs. At the distance we are from the contest and the actors, we cannot pretend to pronounce who are *not* deserving such reproach as is cast by the following, and by some other pieces which we have previously copied. But in some other cases, the right to the character of *humbugger* is as manifest in the communications themselves, as if the writer's name and signature had been "Grant Thorburn." The following seems to be a sensible piece, and its censures to be fairly and properly bestowed. But whether, after all, it is not one of the same numerous batch of advertisements and puffs disguised as communications and essays on breeding, is more than we can decide.

It is scarcely necessary for us to add, as explanation, that we are far from being hostile, or careless in regard to the improvement of our live-stock—and that we have a high opinion of the

value of the Berkshire breed of hogs. But that we hold agricultural cheats and humbuggers, pretending to be agricultural improvers and benefactors, in most especial contempt.—Ed. F. R.]

From the Cultivator.

Messrs. Gaylord and Tucker—I have looked on with much amusement, at the quackery attempted to be practised on the public, relative to Berkshire swine; and have been not a little surprised at the assumed dictation of individuals, whose knowledge of this breed, its changes and varieties, has been limited to a few important animals and their descendants; and who have undertaken to determine, from the color of some half dozen hogs brought to this country by Mr. Hawes, how many white hairs constitute a full blood, and how many black feet betray a grade; to say nothing of the twist in the tail, and the bunch of hairs at its end. Now really, gentlemen, you must not wonder that there are scoffers at "book farming," and those among us who set lightly by the scribbling of self love; and while there are many who highly appreciate the much that is useful and instructive in your columns, we must beg leave to laugh at the ridiculous, as its best cure.

It is truly astonishing, that any one should display such woful ignorance as to the real origin and history of the hogs which now fill his sty, as is exhibited by an Albany breeder, in a late number of the Cultivator. He calls them "the full-bred Berkshires." Let us examine this matter a little, and see what are the characteristics of the Berkshires, as given by English writers. Loudon, Cully, "The Complete Grazier," Parkinson, and Low, all agree, with some little differences of expression, in assigning to the original Berkshires, a tawny or reddish brown color, with dark spots. To this, I would add my own testimony, having formerly been myself a resident in the county of Berkshire. The pure-bred native hog at that time was spotted, black and white, in nearly equal proportions, with a greater or less intermixture of reddish hairs, giving a ferruginous hue to the whole coat. They were a long, large, heavy hog; rather flat in the side, always full, and meaty in the ham; somewhat slope rumped, a little heavy in the bone, something straight in the face, but with a tolerable fulness in the jole, and a drooping ear; their hair was inclined to coarseness, and often curly. On the farm where I lived, they were seldom put up to fatten till three years old; and when fit to kill, would average from twenty-five to thirty-five score. We used them for bacon, considering they made better hams and flitches, than any other breed. These were the hogs universally found in Berkshire, in my day. Mr. Astley of Oldstonehall, has, I believe, the merit of having improved this breed as above described, by a judicious introduction of the eastern blood; and the hog thus formed, has been crossed upon almost every race in England, in all cases with the most advantageous results. It is a cross of this improved Berkshire with the Chinese, which we have in this country, under the name of full-bred Berkshires. As to color, had that come under the consideration of the breeder, he might have varied it from pure white to jet black, by making use of the white or black Chinese, with strict reference to such a result. I shall not pretend to decide which color has claims to superiority, although the black China is considered the most hardy and prolific, while the white is perhaps the better formed. Whether these differences are sensible in their crosses on the Berkshire, I am not prepared to decide. Again—there is of course, great variety of size, and some of form, according to the number and character of the crosses taken from the various races. Many of the smaller Berkshires, so desirable as porkers, are without doubt descended from a cross of the Axfords, in which there is a dash of the Barbadoes blood, strongly tending to confirm the reddish tinge of the old breed. But, without entering farther into detail, I think I have said enough to expose the utter absurdity of these critical distinctions of color, even to the "emblems" of three white toes, &c., which have been held up to just ridicule in some of our late agricultural papers. And who shall say now that he alone has *The* improved Berkshires? What is to become of the "*Rudgwick*" cross, the "*Hampshire*" of the present day, in which the Berkshire blood stongly predominates; the fine boned and delicate "*Dishley*," said to lay on a larger quantity of meat in proportion to bone and offal, than any other kind; Lord Western's celebrated breed of "*the Essex half blacks*," considered by many to be the finest in England? What is to become of these and many others, all of them crosses of the Berkshire family? I would ask, then, on what grounds the Albany importation claim to be the standard of "*The* Improved Berkshires?"

In the extra accompanying the May number of the "Cultivator," I saw an advertisement of "Pure Berkshires, without any *alloy* of black Siamese or common white hogs." I should really be glad to see one of the animals, for an improved Berkshire, without any of the eastern blood in him, cannot probably be found in England.

I was much gratified to see in the last "Cultivator," an article relative to "true size." The writer indeed lays down the golden rule on that subject. "The greatest weight in the smallest relative compass; *weight for inches, not for superfice.*" Now, this is just as true with regard to swine, as to cattle. What is it that our breeders are doing, urged by the mania for size, but breeding back again as fast as possible to the old *unimproved* Berkshire, thus undoing in their wisdom all that the science of England has accomplished in so many years? But, say our western friends, we must have size, to fill the pork barrel. Fill it with what? Heads and shanks? They will indeed fill the barrel, but not the *consumer*, which is a far more important consideration. If the Berkshires can be forced to an increased size, and still retain their light offal, well and good—provided they do not degenerate into the coarse animal, of which there may be no little danger. But I would not be understood as advocating the paltry, short-sighted policy of those from whom we expected better things; who have sent away such "riff-raff," to meet the pressing demand for Berkshires, as would induce one to suppose the very scourings of a city suburb had been collected for the purpose. How much more conducive to their own true interests, has been the course pursued by that shrewd, far-seeing people, the Shakers of Watervliet, in carefully preserving the size of their animals, to which I presume they are main-

ly indebted for the late sale of their whole stock to Mr. A. B. Allen, of Buffalo, under whose judicious and careful management, their excellence will undoubtedly be preserved, and the public expectation with regard to them, fully met. They will neither be stuffed to plethory, nor starved to pigmies; and considering Mr. Allen to possess the pride and feelings of a breeder, we may hope to escape the "culls and runts" of his litters, although we may not always be able to command his best; for it is not to be supposed that any "established breeder of reputation," would sell the refuse of his stock at any price, which would be the infraction of a rule well known to the *true* breeder—although it has not been picked up with other matters of the craft by the *dealers* in Berkshire pigs, who it seems sell all they can raise, at one price or another—if not $20, why then 20s.

As the intent of your paper is to elicit truth, and serve the farmer, I presume you will not object to giving the above an insertion. I am not now a breeder of the Berkshire, having given my attention to other departments, but I would lend my feeble aid to the maintenance of science, against quackery in every shape. D.

Cambridge, Mass. August 31, 1840.

SHEEP BREEDING.

From the Eng. Farmer's Magazine.

"When a race of animals have possessed in a great degree, through several generations, the properties which it is our object to obtain, their progeny are said to be well bred, and their stock may be relied on; and it cannot be doubted that any breed may be improved in the same manner."—*Sir John Sinclair.*

When I consider that there are continually grazing on our fertile pastures thirty-two millions of sheep, which, exclusive of the carcass, produce a yearly clip of wool of the value of seven millions of pounds sterling, employing 350,000 individuals, and ultimately yielding manufactures to the amount of, at least, twenty-one millions of sovereigns annually, my heart expands with English pride, and I am happy my lot was cast in such a country. But then comes the curdling inquiry of how is it that the good common sense of the British farmer, with appliances enjoyed by no other agriculturist in the world, still suffers his green hills to be disfigured with such an inappropriate illegitimate race of sheep? Unwilling as I am to cause pain to any one, or to assume superiority over brother husbandmen, yet imperative truth forces me to regret that even in the middle of the 19th century the following inconsiderate practice prevails:—A farmer rides a day's journey to a sheep letting, where he sees a number of animals of various pretensions, fetching, according to worth or fancy, from fifty shillings to nearly as many pounds. Now this motley batch of varying priced rams have all been bred in the same bungling way from the same flock, and by the same males. And the sheep that is now making twenty pounds is by the same sire as he that but climbs to fifty shillings; the higher priced one being but a chance hit of comeliness, without system in his production, or certainty of what will be his progeny. It could not have happened otherwise, for had those individual sheep been bred with any science or method at all, there could not have been that degrading disparity in the produce of the same flock. But such a ram breeder has no help in him, for he also yearly goes as far off for his males (there's a charm in great distances,) where he has picked out one, but also without character or pedigree, with nothing but present external appearances and smell of oil cake to recommend him; no one being able to predict whether his offspring will be ringstreaked, speckled, and spotted —whether their faces will be black, gray, or white. At such a market the obtaining a showy sheep is all that can be expected or guarantied—all the rest is clouds, darkness, or uncertainty, and propably the next crop of lambs may show patches of as many breeds, and as many contradictory defects as there are counties in England. Therefore it cannot be too urgently pressed on the attention of sheep breeders that in hiring rams, a first consideration should be to select from such top-masters only as have pedigree, uniformity, and character, superadded to a goodly appearance in their general flock.

To those farmers who are undecided from whence to have their next male sheep, I respectfully submit, do not be satisfied with merely seeing a score or two of the firstlings of a flock penned up for display. Quietly go over the whole farm, and after allowance for variety of pasturage and shelter, see whether there is a uniformity in the flock; whether any promiscuous two or three score of them present such an identity as to render it difficult for individuals to be distinguished from each other. See that the males are masculine, and the females feminine, with an harmonious family likeness running through the whole. Then ask the proprietor how he procured even a flock—whether he changes it by introducing new and unknown males with every returning season? He will answer in the negative, and say he has for a quarter or half a century carefully bred only from such as he well knew, whose uninterrupted pedigree he can produce, and during that time his mutton had not deteriorated, nor his wool lost weight nor quality—that he indulges in no auxiliaries, as cake, corn, or seed, for food, or sheds for shelter, but that they eat nothing but what is grown on the farm—that they are thereby fortified against debasing influences of every kind, and truly a desirable flock to breed from. My sheep being far short of perfection, though perhaps a stage or two in advance of some of my brother breeders, I beg to describe them. Abiding ever by what I have already said about the head—the head is short, round, and without angle or hollow, a tape passed from the throat round behind the ears shall about equal alike the girth from the throat over the eyes and forehead—a quiet but confident aquiline visage (no pig-faced lady for me)—ears woolly, short, well back and down bent, not rabbit fashioned—the neck not straight lined from the rump, but set on at the shoulders at about a 45 upward angle, nor tapering over delicately towards the head, but thick, full, and fleshy along its whole length—blade-bones well-spread far back, and showing the chine above their upper working which will produce a large, open, and heavy breast, not pitched downwards as in the greybound, but rounded up to a frontage like the forekeel of a ship. This enables the sheep to look well in the face, and gives it a presence as if standing up hill from whatever aspect it may be

viewed, that is gradually rising from the loin to the setting of the neck, which again springs upwards thick, full, and muscular—nor do I object to a slight hollow about the middle of the back, capacious loin, spread out hips, and well connected rumps—wide and fleshy in the twist, legs short, light boned, and under the sheep, not stuck out like four props to a hay stack. I covet not a thick tallow tail, but must have a well woolled belly. Other breeders possibly have better sheep; I know what mine cost, and what they pay, and in this respect am a contented man. I had more to say, but fear I am trespassing. PRACTICAL.

P. S. Of course I have been speaking of the muscular frame, not of the fatty obliteration of all form, in my flock of sheep.

HENERY—NOT HENRY.

From the Maine Cultivator.

Henery, says our neighbor Adams of the Temperance Gazette, is to *hens*, what piggery is to pigs or rookery is to rooks,—he might have added, or hoggery to hogs, and cowery to cows. We are glad to find him so learned in these matters, and especially to see him willing to turn his knowledge to a *practical account*.

During a late visit in Winthrop, he noticed the henery establishment of Rev. D. Thurston, which as he thinks it an improvement on the common method of keeping hens, he thus describes in the last Gazette:

"*Improved Henery.*—We are not sure that *Henery* is a *dictionary* word, but we suppose that our readers will understand it. If not, we would say that henery is to hens, what piggery is to pigs or rookery to rooks: a place where these useful feathered bipeds congregate and perform the appropriate duties of their station. We lately met with one of these establishments, which seemed to us so excellently adapted to its purpose, that we have thought it worth a brief description.

First, then, in the upper part of the barn is an apartment 12 feet square, boarded so as to prevent the escape of what is put within it. Here the fowls are to roost, lay their eggs, and perform all their in-door work. At the distance of a rod and a half from the barn, on the borders of the garden, is another apartment of about the same dimensions as the first, surrounded by a high fence, made of lath stuff, sawed two inches wide, and nine feet long, and put on close enough to prevent the hens from getting out. These two apartments are connected by a covered way, which passes from the scaffold of the barn, in what some would call a *slantindicular* direction, to the fence, about three feet from the top, and is continued down to the ground in the inside of the yard. This is made tight top and bottom, and on one side, but with open work on the other side. Through this covered way, the inmates of the establishment pass when they choose, taking the air and enjoying the prospect, and when they come into the out door apartment, they indulge, *ad libitum*, in their favorite amusement of scratching dirt and devouring gravel.

The result of the whole is, they are kept under perfect control, and yet enjoy all that liberty which is essential to their health and comfort, and when you want a fresh egg, you have only to lift a lid over a row of little apartments, in which their nests are made, and you will find at almost any time of the day, a plentiful supply. The little chickens too, as soon as they are large enough to make excursions abroad, will be ready to perform an excellent service in the garden, by devouring the grubs and insects. Thus the inhabitants of our villages and of our cities even, who have "scope and verge enough" to possess a barn and a garden, can keep as much poultry as they choose, without infringing in the least upon the laws of good neighborhood. Those who may wish to inspect the establishment we have described, may be gratified by calling on the Rev. D. Thurston, of Winthrop."

The plan, doubtless, is a good one. By such an enclosure, the fowls are kept from doing damage in cultivated grounds, are prevented from roving to their own hazard and injury, and will, if properly fed, lay their eggs and rear their young better, than if they enjoyed a more enlarged liberty. Care should be taken, however, when they are confined to supply them liberally with water, gravel, lime and animal food—such as fresh meat, worms, &c. In this way, people in large villages and cities can keep hens as well as if they lived on farms in the country. Indeed, it would be better for farmers if they would, at certain seasons of the year, keep their poultry in such an establishment.

We do not know as we understand the necessity or the benefits of *separating* the yard from the barn, by the distance of a rod and a half of unoccupied ground, connected by the "covered way," or tube leading from the barn to the yard. Our establishment differs from the foregoing chiefly in this particular. The yard is directly attached to the back side of the barn, from the wall of which a roof projects, under which are poles for roosts. This is a shelter from the rains and winds. On a level with the floor of the barn, two holes are cut, several feet distant from each other, sufficiently large to enable a hen to enter one and skulk out of the other into the yard again if she wishes. The hens like secrecy in these important matters. Within the barn is a long chest, covered by a lid, having a communication with the yard by the holes aforesaid. The chest is partitioned off into nests, where each hen is allowed to lay her eggs "alone in her glory," little suspecting, perhaps, that the top of her excellent place of concealment is liable to be opened, and her eggs taken away by human stratagem.

OF THE WASTE LANDS OF FRANCE.

From Arthur Young's Agricultural Survey of France.

SOLONGE.—There is, in this province, such a large mixture of waste, even in the most cultivated parts, and cultivation itself is carried on upon such barbarous principles, that there will not be much impropriety in considering the whole as waste; to every spot of culture called a farm, a much greater proportion of rough sheep-walk and wood (eaten down and destroyed) is annexed; so that any good farmer, who got possession of 1000 or 1500 acres, would conclude the whole as waste and treat it accordingly: by much the most unproductive and poorest part of such a tract would, in every case, be the lands at present under the

plough. I may, in confirmation of this general idea, add, that there are many absolute wastes in France, that yield as good and even a better produce than all Sologne, acre for acre. I know no region better adapted for a man's making a fortune by agriculture, than this; nothing is wanted but capital, for most of the province is already inclosed.

BERRY.—*Chateauroux.*—Leaving this place for the south, enter vast heaths of ling and furze, but much mixed with trefoils and grasses. Some small parts of these heaths are broken up, and so ill ploughed, that the broom and furze are in full growth. After this another heath, of several miles' extent, where the landlords will not give leave either to build or break up, reserving the whole for sheep, and yet not stocked; for the people assert, that they could keep twice the number, if they had them.

LIMOUSIN.—*To Limoges.*—The mountainous heaths and uncultivated lands are commons, and therefore every metayer sends his sheep in the common flock of the village.

BIGORRE.—*Bagneres de Luchon.*—The waste tracts of the Pyrennees, by which are to be understood, lands subject to common pasturage, are so much subject to the will of the communities, that these sell them at pleasure. Formerly the inhabitants appropriated to their own use, by inclosure and cultivation, what portions they pleased; but this obtains no longer; at present the communities sell these wastes, and fixing a price on them, nearly to their value, new improvements are not so common as heretofore.

LANGUEDOC.—*Narbonne to Nismes.*—This vale, which is by far the richest of Languedoc, in productions, is of no considerable breadth, yet the quantity of waste neglected land in it is very great.

Monrejau to Lann-Maison.—Vast wastes, covered with fern; the soil good; and land projecting into it cultivated to advantage.

Bagneres de Bigorre.—These immense fern-wastes continue for many miles, with many new improvements in them. They belong to the communities of the villages, which sell portions of them to any persons willing to buy. The price most common has been 20 liv. the journal, of 128 cannes square, the canne 8 pans; the pan 8 inches and 4 lines, 4 journals, making an arpent. The method of improving has been, first to burn all the fern and rubbish, then to mattock it and sow rye, which is pretty good; then oats for six, seven, or eight years, according to circumstances; after that they summer-fallow and take wheat. Some they leave to grass and weeds, after those eight crops of oats; a detail of the husbandry of barbarians! They have all a right of commonage on the wastes, as long as these continue uninclosed; consequently can keep cattle, and especially sheep, to any amount in summer; yet, in their inclosed improvements, they give not a thought to raise winter food! Such stupidity is detestable. The parish of Cavare has 104,000 arpents of these wastes, without one metayer; all are peasant proprietors, who buy morsels as it suits them. The improvements are exempted from tithes for ten years; but not at all from the King's taxes, which is shameful.

BEARN.—*Pau to Moneins.*—Vast wastes of rich soil, covered with an immense product of fern, to the amount of five or six wagon loads an acre.

St. Palais to Anspan.—Vast wastes; belonging to the communities of the parishes, that sell them to whoever will buy: a common price 120 liv. per arpent; but after they are brought into culture, they sell for at least 300 liv. The advantages of this system, which extends through the whole region of the Pyrennees, is prodigious: it excludes the rights of commonage, because all is inclosed as fast as bought; and enables every industrious man that saves a little money, to become a land proprietor, which is the greatest encouragement to an active industry the world can produce; it has, however, one evil, that of too great a population.

Bayonne to St. Vincents.—In this line I came first to the *landes* of Bourdeaux, because they extend from the gates of Bayonne to those of Bourdeaux, and of which I had read so much, that I was curious to view and examine them; they are said to contain 1,100,000 arpents*. They are covered with pines, cork trees (only half the value of pines), broom, whins, ling, and furze; the soil sand, but the growth of trees shows a moist bottom. There is a good deal of cultivation mixed with the waste this first stage. There is much land also under water, a sort of sandy fen. Pass a great space, without trees, covered with dwarf furze, ling, and fern. Others before Dax; one of them of five or six miles long, by two or three broad: much rough grass and ling on it: but none of these tracts appear half stocked.

Dax to Tartas.—This district is a deep white sand, the whole of which has evidently been *lande*, but part of it inclosed and improved; much is, however, yet rough.—Singular scene of a blowing sand, white as snow, yet oaks growing in it two feet diameter; but a broken ground discovers a bed of white adhesive earth, like marl, which explains the wonder.

Learn at Tartas, that these immense wastes, the *landes*, without pines or wood, are to be purchased, at all times, very cheap indeed, of the king, the great lords, and of the communities of many parishes, even so low as 3 liv. per arpent, with an exemption from tithes, and from taxes for twenty years. But every one here reckons them so bad, that all the money spent would be sure to be lost; yet it is admitted that there is a bed of marl or clay under all the country. This opinion is chiefly founded on the attempts of Mons. Rollier, of Bourdeaux, having made a trial of cultivating them, and succeeded very ill. I guessed how such improvements had been attempted, and told my informants what I supposed had been done; and my guess proved exactly right: corn—corn—corn—corn; and then the land pronounced good for nothing. It does not signify telling such people, that the great objects in all improvements of wastes, are cattle, and sheep, and grass, after which corn will be sure. Nothing of this kind is comprehended from one end of France to the other.

As I shall here take my leave of these *landes*, I may observe, that, so far as they are covered with pines, they are not to be esteemed wastes; but on the contrary, occupied with a very profitable culture, that does not yield less than from 15s. to 25s. an acre annual revenue. Of the very exten-

* De la Necessité d'occuper tous les gros Ouvriers, p. 8.

sive tracts not so employed, and which are to be purchased at so cheap a rate, they are among the most improveable districts in the kingdom, and might be made, at a very small expense, capable of supporting immense flocks of sheep.

Cavignac to Pierre Brune.—Many sandy wastes, with white marl under the whole.

To Chersac.—Great wastes, of many miles extent, covered with fern, ling, and shrubby oak; all greatly improveable.

To Montlieu.—Ditto. Many of these wastes belonged to the Prince of Soubise, who would not sell, but only let them; the consequence has been, that no improvements have been wrought.

La Graule.—The wastes in this country are sold at 10 liv. the journal, and less; some better at 20 liv. The journal here is to the English acre as ten to thirty-eight; it consists of 10 carraux, each 18 feet square.

NORMANDIE.—*Valogne to Cherbourg.*—Mons. Doumerc, of Paris, having bought of Monsieur, the king's brother, 3000 arpents, part of 14,000 sold at the same time, being parcel of an ancient, but much neglected, forest, has made an improvement here, which, so far, deserves attention, as it shows the principles on which French improvers proceed. He has brought into culture 700 verges, which form his present farm, around a house for himself, and another for his bailiff, all built, as well as many other edifices, in much too expensive a manner; for these erections alone cost 2500 louis d'or. Such unnecessary expenditure in building is generally sure to cripple the progress in much more necessary matters. The first business in the improvement, was to grub up the wood; then to pare and burn; and manure with lime, burnt with the furze, fern, and heath of the land; the stone was brought from Valogne: as soon as it was cleared, it was fallowed the first year for wheat. Such infatuation is hardly credible! A man is commencing his operations in the midst of 3000 acres of rough ground, and an immense pasturage for cattle and sheep, begins with wheat; the same follies prevail every where: we have seen just the same course pursued in England, and prescribed by writers. Such people think cattle and sheep of no importance at the beginning of these improvements. This wheat, limed at the rate, per arpent, of 7 or 8 tonneaux, of 25 boisseau, each 18 pots of 2 pints: 4 boisseau of seed sown, and the crop 40 boisseau. After this wheat sown 5 boisseau of oats, the crop 40. Then barley, seed 4 boisseau, produce 20 to 25 boisseau. With this barley clover sown; mown the first year twice, and pastured the second; being then ploughed for wheat, which is inferior to the original crops; then oats and fallow again. From all these crops it is sufficiently evident, that French farmers esteem corn, and not cattle, the proper support of a new improvement. The soil which has been thus reclaimed, is on a stone quarry in general; a friable sandy loam, covered with a strong spontaneous growth (where not forest) of furze, fern, and in some places, heath; mixed with much grass, and even clover and *millefolium*; which, if properly stocked by cattle, well fed in winter, would be of no considerable value in its present rough state.

Though the methods pursued have not been calculated on the best principles, yet there is certainly a considerable degree of merit in the undertaking. Last year's crop of wheat produced 40,000 gerbs; and this year (1787) there is one piece of oats, of 80 verges, which gives 12,000 gerbs, at 15 boisseau per hundred; each boisseau 40 lb. and the price at present 45s. The present stock 207 wethers, 10 horses, 21 working oxen, 10 cows, 1 bull, 6 young cattle, are certainly fine, for a spot where, ten years ago, Mons. Baillio, the bailiff, who has executed the whole, and who seems to be a truly excellent man, was in a hovel, with no other stock than a dog. The whole improved, would now let at 15 liv. per verge, 2½ to the arpent.

BRETAGNE.—*Combourg to Hédé.*—Pass an immense waste for a league, but to the left a dead level, boundless as the sea; high lands at one part, seemingly 8 or 10 leagues off. Every part which the road passes, has been under the plough, for the ridges are as distinct as if made but last year; and many ruined banks of hedges cross it in various ways. The spontaneous growth, furze, ling, and fern; the soil good, and equal to valuable crops, in a proper management. The king has part, Mons. de Chateaubriant part, and other seigneurs also; but every body I talked with says it is good for nothing. Would to heaven I had 1000 acres of it at Bradfield! I would soon put that assertion to the test.

Rennes.—The waste lands, which, in almost every part of the province, extend for many leagues, are almost every where to be bought, in any quantity, of the seigneurs, at 10s. the journal, which is to the English acre as 47 to 38, with a small quit-rent per annum.

St. Brieux.—Inquiring here into the period of the cultivation which I every where remarked on the *landes* of Bretagne, I was told, that it was no ancient culture, but common for peasants, who took them of the seigneurs, to pare and burn, with the *ecoubu*, exhaust, and then leave them to nature: and this for forty, fifty and sixty years back. Rented for ever, at 20s. to 30s. the journal.

St. Nazaire to Savanal.—Immense bog marked on all the maps of Bretagne, and filling the space of many leagues, covered with vast growth of bog myrtle and coarse grasses, three or four feet high; what a field for improvement, in a climate that gives such a spontaneous growth!

To Nantes.—In the *landes*, which, strange to say, extend to within three miles of Nantes, there was an improvement attempted some years ago: four good houses of stone and slate are built, and a few acres run to wretched grass, which have been tilled, but all savage, and become almost as rough as the rest: a few of the banks have been planted. This may be the improvement I heard of afterwards at Nantes, made by some Englishmen, at the expense of a gentleman, and all the parties ruined. I inquired how the *improvement* had been effected: wheat, rye, oats!!! Thus it is for ever: the same methods, the same failures, the same folly, the same madness. When will men be wise enough to know, that good grass must be had, if corn is the object?

Nantes.—I have now travelled round the vast province of Bretagne, and may observe, that so large a proportion of it is waste, as to be difficult to calculate: I have passed tracts of land, of three, four, five, and even eight miles in extent, without any cultivation, and I have heard of much more

considerable, even to fourteen leagues in length. I have marked one district in the map which contains some hundred thousand acres. Three-fourths of the province are either waste, or so rough as to be nearly the same thing. This is the more surprising, as here are some of the first markets in France; that is to say, some of the most considerable commercial towns; and every where the vicinity of the sea. These enormous wastes, which are said to exceed two millions of arpents*, are found, as I have remarked, in my notes on the great road, within four miles of such a city as Nantes: vast districts are to be had on leases, or rather property for ever, on the payment of very flight fines. The soil is generally very improveable; I mean, convertible to cultivation, at a very small expense, and with great facility; contrary to the assertion of every body in the province, who have been so used to see it desolate, that they cannot readily believe it capable of a better husbandry than being burnt, exhausted, and left to nature. The means of improving these wastes are absolutely unknown in France, and not much better understood in England. The profit of the undertaking, however, when properly pursued, upon the never-failing principle of grass —sheep—cattle—corn; instead of the common blunder, which puts the cart before the horse (if I may use a vulgar proverb), will be found great and rapid.

ANJOU.—*Turbilly.*—In the Journal part of this work, I have explained the motives which carried me out of my road, to view the wastes of this vicinity, and particularly the improvements of the late Marquis of Turbilly, described at large in his *Memoire sur les Defrichemens*, which has been so often cited in almost every language.

The immense heaths, or *landes*, are in general a sandy or gravelly loam; some on a gravel, others on a clayey, and others on a marly bottom; and others, again, on imperfect quarry ones: the spontaneous growth would predominately be every where forest, particularly of oak, if it were inclosed, and preserved from depredation. At present, it is wood browsed and ruined, fern, furze, broom, ling, &c. &c. In the desert state in which the whole country is left at present, the value is nothing else but what it yields to a few cattle and sheep; not the hundredth part of what might be kept, if any well regulated provision were made for their winter support. I passed ten miles over these heaths; they were, in some directions, boundless to the view; and my guide assured me, I might continue travelling upon them for many days. When at Tours, I was told of their extending much in that direction also. The climate is good. There are streams that pass through these wastes, which might be employed in irrigation, but no use whatever made of them; there are marl and clay under them, for manure; and there is every where to be found plenty of pasturage, for the immediate summer food of large flocks.—in a word, there are all the materials for making a considerable fortune —except skill and knowledge.

Such was the country in which the late Marquis of Turbilly sat down, at an early period of life, determining to improve his estate of 3000 arpents in these deserts; with all the necessary activity of disposition; every energy of mind; and that animated love of laudable attempts, to give life and efficacy to the undertaking. Some meadows and plantations, which he made, succeeded well, and remain; but, of all his improvements of the heaths, to the inconsiderable amount of about 100 arpents, hardly any other traces are now to be seen, except from the more miserable and worn-out appearance of the land; which, after cropping, was of course left in a much worse condition than if it had never been touched. The fences are quite destroyed; and the whole as much *lande* as before improvement. This flowed from the unfortunate error, so common, indeed so universal, among the improvers of waste lands; and unexceptionably so in France—that of improving, merely for the purpose of getting corn. Pyron, the laborer who worked in all the Marquis' improvements, informed me, that he pared and burnt, which is the common practice of all the country, and then took three crops of corn in succession; that the first was very good, the second not good, and the third good for nothing, that is, not above three times the seed: from that moment there was an end of improvement; it only crawled, during many years, to the amount of 100 acres; whereas, if he had begun on right principles, he would, in all probability, have improved the 3000; and, others copying his modes, the whole country might, by this time, have been under cultivation. It was reckoned a vast effort in him to fold 250 sheep: and this was the best engine he had in his hands; but giving the fold for corn, it was lost as soon as exerted. Instead of 250 sheep, the Marquis should have had 500 the first year, 1000 the second, 1500 the third, and 2000 the fourth; and all his paring, burning, manuring, folding, exerted to raise turnips (not their contemptible *raves*) to winter-feed them; with so much burning, folding, and eating off the turnips, the land would have been prepared for grass; and when once you have good grass, good corn is at your command. Thus corn was the last idea that should have entered his head: instead of which, like other French improvers, he rushed upon it at once—and from that instant all was ruined.

The particular advantages of the spot are considerable, if ever an improver should arise, with knowledge enough to pursue the methods that are adapted to the soils and situation. The hills of all the country are so gentle, that they are to be tilled with great ease; offering the advantage of perennial streams, that run at present to waste in the vales. There are rich veins of white marl, with an under-stratum, in many places, of clay. There is a hill of shell sand, for improving the stiffer soils and moory bottoms. There is limestone at the distance of half a league, and plenty of peat to burn it. The Marquis of Galway's father spread some of the shell sand on a small poor field, and had an immediate luxuriance of crop in consequence. The present curé of the parish has tried the marl, with equal success. But both these manures, and indeed any other, would be absolutely lost, if a succession of corn crops were immediately to follow. It is this valuable under-stratum of clay and marl which gives such a growth to wood. In passing from La Fleche to Turbilly, I was amazed, in some spots, at the contrast between the apparent poverty of the surface soil, and the oaks scattered about it; they, are in general, eaten up by cattle, yet

*De la Necessité d'occuper tous les gros Ouvriers, par Mons. Boncerf. 1789. p. 8.

the bark is clean and bright, and this year's shoots four and even five feet long. A common mode, and indeed the only one, of attempting improvements here, is to permit the peasants to pare and burn pieces of the heath; to take five crops in succession, but to leave the straw of the last; to fence the piece around; and to sow whatever seeds of wood the landlord provides, usually oak, for a copse, which, in this villanous way, succeeds well; but as such copses are fenced with a ditch and bank only, and never any hedge planted, they are presently open and eaten.

MAINE.—*Guesselard.*—The *landes* of Anjou extend over a great part of Maine also. Here they told me, that the extent in that neighborhood is hardly less than sixty leagues in circumference, with no great interruption of cultivation. The account they give of the soil is, that it is absolutely good for nothing but to produce wood, which it will do very well. The seigneurs fief it out for ever, in any quantity, at the rent of half a bushel of oats an arpent (the bushel 30 lbs. of wheat), and some at 10s. to 20s. the peasants pare and burn, and get a very fine crop of rye; then another poor crop of rye; and after that a miserable one of oats; reckoning, in common, that a burning will give just three crops; after which the land is strictly good for nothing, but is left to nature to recover itself. The price of paring and burning 30 liv. per arpent. I can hardly record these instances of barbarism with tolerable patience—without dealing execrations, not against a poor unenlightened peasantry, but against a government possessing, in demesne, immense tracts of these lands, without ever ordering any experiments to be made and published, of the best methods of improving them. But had it come into any such projects, and had those experiments had French conductors, they would have been merely with a view of getting corn! corn! corn!

To Le Mans.—Much of these wastes here resemble the sands of Sologne; upon a dead level, and water standing in many places; yet the soil a sand; and, in spots, even a running one: it arises from the same circumstance which makes them productive of oak timber, wherever preserved, viz. the bottom of clay and marl.

BOURBONNOIS.—*Moulins.*—Three fourths of the whole province waste, or heath, or broom or wood.

St. Pourçain.—As I quitted the Bourbonnois in this vicinity, entering Auvergne, it will not be improper to remark, that the whole province, as well as that of Nevernois, ought, respecting all the purposes of improvement, to be deemed waste. The culture that is carried on, without any exception, on the arable lands, is only fallowing for rye; and, after two or three rounds, the land is so exhausted by this blessed system, that it is left to weeds: broom is the prevalent spontaneous growth in such a case; and if the broom be left for a number of years, it becomes a forest. This rye-course produces the landlord, for his half (as all is in the hands of metayers), about 2*s.* 6*d.* or 3*s.* an acre through the whole farm, by corn, cattle, &c.; and at such rates a vast proportion of the province is chiefly to be bought. Considering that the lands are all inclosed; that wood enough is every where found; that the country is furnished with a sufficient quantity of buildings; that the roads are excellent; that it enjoys a navigation to the capital; that markets are good, and prices high; that there is marl or clay under the sands and sandy gravels; that the climate is one of the finest in Europe; and the country highly pleasant and beautiful; when all these circumstances are well weighed, it will be admitted that no part of France is so eligible to establish a great and profitable improvement; but, as I must again repeat it, the whole province appears waste to the eyes of an English farmer.

AUVERGNE.—*Brioude.*—The mountains in this neighborhood too much cultivated; the earth is, by such means, washed away by storms, and torrents drive away every thing.

VIVARAIS.—*Pradelles.*—Pare and burn old turf in these mountains. Great tracts burnt, exhausted, and left to nature to recruit.

To Thuytz.—Cultivation is carried on in these mountains to an incredible height; and is all by hand. In some cases, earth is carried, by hand, in baskets, to form the terraced beds, that yield a difficult and scanty crop, that is brought away on the back. Nothing could possibly support such exertions, but the whole being small properties; every peasant cultivates his own land.

PROVENCE.—*Tour d'Aigues.*—The mountains here are all calcareous, yet they are, from a vicious culture and management, destroyed and abandoned, and yield subsistence to a few miserable goats and sheep only; such mountains in the Vivarais, the President remarks, are covered with superb chestnuts, that yield a good revenue—this country would do equally well for them, as appears from the very fine ones found in the park of Tour d'Aigues. The cutting of every bush for burning the earth is the cause; this species of culture loosens the surface, and renders it a prey to torrents; so that all is washed into the rivers, and becomes the destruction of the plains. The Durance, in its whole course, of near 200 miles, has destroyed, on an average, to the breadth of half a league.

General Observations.

In the preceding notes, mention is often made of great tracts of country, so miserably cultivated that the whole would, by a good English farmer be considered as *waste.* This is particularly the case in Bretagne, Maine, Anjou, Sologne, Bourbonnois, &c.; and it is this circumstance which reduces the general average product of France to so low a pitch, as appears in the chapter which treats of it, notwithstanding the immense tract of twenty-eight millions of rich land, the products of which are, of course, very high. Here then ought to be the great effort of a new system of government in France. The revolution has cost immense sums; and has occasioned a happy defalcation of the revenue, provided it be replaced wisely and equally, on some object of general consumption, *and not on land*; but the public burthens of the kingdom are so heavy (proportioned to its consumption and circulation,) that every attention should be exerted to increase and improve the contributing income; and this can in no way, and by no methods, be effected so well and so easily, as by spreading improvements over these immense wastes, which are such a disgrace to the old government. The wastes alone are calculated in these sheets, at 18,000,000 of English acres; if to these we add the tracts, in the above mentioned

provinces, which, though cultivated, are no more productive than wastes, and much of them not of equal profit, we cannot reckon for the whole less than 40,000,000 of acres that are in a waste state: not absolutely unproductive, but which would admit of being rendered four, five, six, and even ten times more so than they are at present. This extent is nearly equal to that of the kingdom of England; whence we may judge of the immense resources to be found in the improvement of the agriculture of France; and the wisdom of the measures of the National Assembly ought to be estimated in proportion to their exertions in this respect, rather than in any other. If they give a ready, immediate, and absolute right of inclosure; an exemption from all taxation whatever, for twenty-one years; and, by a wise system of imposts, the future prospect of not being too much burthened; if such be their encouragements, in addition to the great ones already effected, particularly in the abolition of tithes, they may expect to see, in a few years, great undertakings on these desolate tracts. But the policy of a good government will not, in this point, do the whole; it may encourage buildings, inclosures, manuring, and the investment of large capitals; but if these soils be attempted to be cultivated, as they have hitherto always been in France, failure, bankruptcy, and ruin, will be the consequence; and the lands, after a few years, left in a worse state than they are in at present. The government should therefore, not omit taking the necessary steps, to have instructions well diffused for the cultivation of these immense tracts of country; not in the spirit of the old* system, by printing memoirs, which, if followed, probably would spread more mischief than benefit, but by the exhibition of a farm in each considerable district, under a right management, and in that degree of perfection of culture which is applicable to the practice of all mankind; of the poor farmers as well as of rich ones: every other species of perfection does well enough for gentlemen to commend, but is not adapted for farmers to imitate. One large farm, taken entirely from waste, in Bretagne, another in Anjou, a third in Sologne, a fourth in Bourbonnois, and a fifth in Guienne, would be sufficient. If these farms were cultivated on right practical principles, on those of utterly disregarding corn till the ample support of sheep and cattle (but particularly the former) in winter, by means of green crops, and in summer by grasses, gave such a command and facility of action that whatever corn was then sown, would, in its produce, be worthy of the soil and climate of France, yielding ten for one on these wastes, instead of five or six for one, the present average of cultivated lands, in that kingdom. If this were done, I say, the profit of *such* improvement would be equally great and durable; the practice exhibited would take deep root in the respective provinces; and extensive and speedy improvements would be the consequence. By such a policy, the National Assembly would prove themselves genuine patriots; the kingdom would flourish; population, which, at present, is a burthen, would be rendered useful, because happy; and the consumption and circulation of these provinces increasing, would give a spur to those of the whole society; the weight of taxes would lessen, as the basis enlarged that supported it:—in a word, every good effect would flow from such undertakings, if properly executed, that can add to the mass of national prosperity; and consequently the most worthy of the attention of an enlightened legislature*.

Attempts have been made to improve these wastes, but always with ill success; I saw a neglected farm gone back nearly to its pristine state, not far from Nantes; the Marquis of Turbilly's, in Anjou, had no better success; and equal failures attended those that were tried on the heaths of Bourdeaux; and I heard of some others, similar undertakings, in different parts of the kingdom; but, in general, they were all equally unsuccessful; and no wonder, for all were conducted on the same plan, with no other object in view than corn; but this is the least important of the products, as it hath been above observed, that should be found on new improvements. A French writer†, who speaks from experience, as well as the Marquis of Turbilly, prescribes this course;—1, dig, at the expense of 20 liv. per arpent, of 46,000 feet, in

* The edict, exempting new improvements from taxation, was in the right spirit. We are informed by Mons. Necker, that from 1766 to 1784, no less than 950,000 arpents were declared *défrichés*. *De l'Administ. des Fin.* 8vo. T. iii. p. 233. There can be no doubt but the greater part of these are long since abandoned again to nature. I never met with a single person in France who had half an idea of improving waste lands; and I may add, that, of all other pratices in the agriculture of England, this is the least understood. See my *observations on the present state of the waste lands.* 8vo. In regard to the excellent edict above-mentioned, there occurs a proof of the gross and consummate ignorance which one meets so often in France on all agricultural subjects, In the *Cahier du Tiers Etat de Troyes*, p. 38, they demand the abrogation of this edict, as prejudicial to the nourishment and multiplication of cattle. Even the nobility of *Cambray*, *Cahier*, p. 19, are against cultivating commons. The nobility of *Pont-à-Moussin*, *Cahier*, p. 38, declare, that the encouragement of inclosures and *défrichemens*, is prejudicial to agriculture; shame on their folly! The clergy are wiser; for they demand that the possessors of wastes shall either cultivate them themselves, or let others that are willing, on reasonable terms. *Cahier de Melun and Moret*, p. 22; and that all commons shall be alienable for the prosperity of agriculture. *Bayonne*, Art. 51. And some of the *Tiers Etat* also; all commons to be divided. *Cotentin MS.* And new *défrichemens* to be exempted from all taxes for twenty years. *Nimes*, p. 19. *La Rochelle*, Art. 17, *MS.*

* At present (August 1793) we know what the blood-hound government of France have done for agriculture: *completely ruined* all that was good in it.

† *Experiences and observations sur les Défrichemens.* Par Mons. le Dosseur. *Lamballe.* 1775. 4to. P. 26, 28, 33. This gentleman tells us, that paring and burning should be practised only on a calcareous soil, for in Bretagne the peasants get up two or three crops of corn by it; and if more, much dung is requisite. But if they can have two crops of corn, cannot they have one crop of turnips? Cannot they have grass, which seems never to be in his contemplation, though almost the only thing that ought to be in view. De Serres knew better; he recommends paring and burning, describes the operation, and answers the objection of those who urged a short continuance of the profit, by showing, that such cases proceed from improper management, and do not occur, if the laws of good tillage be pursued, *au cultiver et au reposer.* Le Théatre D'Agriculture, par D'Olivier de Serres. 4to 1629. p. 64 to 70.

winter, and summer-fallow, with many ploughings and harrowings, for—2, wheat;—3, oats;—4, fallow;—5, wheat;—6 oats, &c. &c. This gentleman, who tells us he broke up and *improved* 150 arpents, has not explained how *real* improvement is to be made without sheep or cattle. Where is his winter food in this preposterous course? If these 450 arpents be really improved they have cost him five times more than they are worth; but I suspect they are—improved *à la Turbilly*. It is mere romance to think of improving wastes profitably without a great flock of sheep. The ideas of French improvers seem rooted in a contrary spirit; to the present moment, there is no other plan than the old one of corn. A publication of the year 1791, *Memoire sur l' Utilité du Défrichement des Terres de Castelnau-de-Medoc*, speaks of the same methods—*déraciner—laborer—herser—ensemencer—froment--seigle*, p. 5. The same views in every part of the kingdom; but when you inquire for cattle, you have, on some hundreds of acres, seven cows, three mares, four oxen, and no sheep! (p. 4.)

As the subject is one of the most essential in French agriculture, I will very briefly sketch the right principles on which alone waste countries can be improved to profit. The rapid view which is practicable for a traveller to take, will allow no more than an outline; fully to explain the process would demand a distinct treatise.—1. The buildings, upon which so much money is generally so uselessly employed, should, in a private undertaking, be adapted to that sized farm, which lets in the country most advantageously; but, in a public undertaking, they should be adapted to that sized farm which is most favorable to a beneficial cultivation of the soil; in the latter case from 400 to 600 ccres. This attention to the scale of the buildings flows from the plan of the improvement, which is that of letting the land in farms, as fast as it is well improved, and brought into the cultivation in which it ought afterwards to remain. But whatever the size of the future farms may be, the strictest attention ought to be had to keeping this part of the expenditure as low as possible; it contributes little to the productiveness of the land, except what arises from convenient offices for cattle and sheep.—2, The next object is to buy a large flock of sheep, to feed on the lands in their waste state, that are to be improved; five hundred would be a proper number to begin with. These sheep should be, as nearly as possible, such as the South Downs of England; of the French breeds, the most profitable, and the best to procure, would be those of Roussillon. It is of more consequence to have a breed not too large, and well clothed with a short firm fleece, than larger or more expensive breeds.—3, The first summer should be entirely employed in paring and burning, and cultivating, at least, 100 acres of turnips and rape, for the winter support of the sheep and plough-oxen. After the turnip season is past, the paring and burning to continue for rye, artificial grasses to be sown with the rye.—4, Begin, as early in the spring as possible, to pare and burn fresh waste, first for a crop of potatoes, on fifteen or twenty acres, and then for 200 acres of turnips. The turnip land of last year to be sown with oats, on three ploughings; and with the oats, over fifty acres, clover-seed to be sown. After the turnip season is past, continue paring and burning for rye, as before. The laborers employed in the summer on paring and burning, to work in the winter on ditching, for forming inclosures; the banks to be planted with white thorn, and willows for making hurdles.—This is sufficient to state the leading principles of the undertaking. Economy in the execution demands that the laborers employed should have work constantly; in summer paring and burning, and managing the hay and corn harvest; and in winter ditching; quarrying, if there be lime-stone on the premises, for burning lime, for manure; and, if not, digging and filling marl, or chalk, or other manures which may be found under the surface. In like manner the number of masons and carpenters should be so regulated, in proportion to the works, so as to find constant employment through the building season.

The courses of crops will explain the whole business of tillage. On the land pared and burnt, and planted with potatoes in the spring, the following rotation: 1, potatoes;—2, oats:—3, turnips:—4, oats, and grass seeds for laying down.

On the land pared and burnt, and sown with turnips at midsummer:—1, turnips:—2, oats;—3, turnips;—4, oats, or barley, and grass seeds for laying down.

On the land pared and burnt, and sown with rye in autumn:—1, rye;—2, turnips;—3, oats;—4, turnips;—5, oats and grass seeds for laying down.

All the turnips to be fed on the land with sheep, by hurdling, except the small quantity that would be wanted for the plough oxen.

All the grasses to be mown the first year for hay, and then pastured by sheep, for two, three, four, or more years, according to circumstances. When they wear out, or betray indications of a want of renewal, they may be broken up with a certainty of yielding grain in plenty; but no two crops of white corn ever to be sown in succession: by white corn is understood wheat, rye, barley, and oats.

A very easy, and, in some cases, effectual method of improving heaths, is by grubbing up the plants that grow spontaneously, and spreading lime upon the waste without any tillage, sowing grass seeds and covering them by the sheepfold: it is surprising what a change is thus effected at the smallest possible expense; soils, apparently miserable, have been made at once worth the rent of 20s. per acre.

It is not possible to give more than an outline in such a sketch as this; variations, arising from a difference of soil, will occur; which, though not considerable, must be marked with care, or useless expenses will often be incurred. The method just hinted at is particularly applicable upon those wastes, which are, in culture, sterile, from abounding with the vitriolic acid; the case of many in Bretagne; where pudding stone is found in some districts at six to eight inches under the surface: cultivation on such, by the plough, may be so tedious and expensive, that the mere paring and burning, and application of a calcareous manure, lime or marl, with grass seeds, and fold, as abovementioned, would be much the best improvement, as I have myself experienced, in a country more vitriolic and sterile than any wastes I saw in Bretagne.

The progress of the flock will, by its procreation, show what may be the given progress of such an improvement, providing turnips, in the proportion

of one acre to five sheep, which will allow enough for oxen and other cattle, and supposing the losses upon a flock to be 5 per cent.

If the breed of sheep be good, all the ewes should be saved, for increasing stock, and the wethers should be kept until two years old and past, sold fat from two to three years. On such a plan, a stock increases rapidly, perhaps more so than the capital employed. But the conductor of such an undertaking would of course proportion his flock to his money, so that all the works might be constantly going on, without stop or break; to effect which, would demand no inconsiderable foresight and knowledge of the business.

By the plan of letting the lands, as soon as brought into complete cultivation, the capital employed in the undertaking would be exerted to the utmost force and advantage, in spreading the improvement over the greatest possible breadth of waste. If the lands were all to be kept accumulating into one farm, it would grow too vast to be managed with profit; but, by letting, the principal attention, exertion, and force of capital would be always employed where most wanted and most useful; and it is hardly to be believed, by those not accustomed to such observations and inquiries, how great a tract of country might, in twenty years, be improved.

Planting colonies of foreigners upon wastes, has been a favourite method pursued in several countries, particularly in Spain and Russia; such speculations have rarely answered the immense expenses bestowed upon them. The lands are usually but half improved; the husbandry introduced is almost sure to be bad; and the jealously with which the new settlers are viewed by the natives, prevents their practice from ever being imitated. Such a mode of improvement, as is here sketched, would be infinitely more beneficial; what was done would be well done; all would be executed by natives; for the only foreigner employed in the business should be the director. There would be no probability of the improvement not being durable and spreading widely; for the lands not being let until the cultivation was completely in train, the profits as well as the method would be seen by every one.

By executing the improvement of a waste on these principles, ten thousand pounds would have an infinitely greater effect than a hundred thousand expended in any other method: in the German colonies, established in the Sierra Morena in Spain, and in various others in different parts of Europe, much attention has been paid to the establishing of little farms only. I do not want to view such, to know that the improvement is beggarly, and the husbandry contemptible: no waste can be really improved, and to the best advantage but by means of the sheep, powerfully applied; all other methods are costly, slow, and of weak effect; but no little farmer can have a flock sufficient. This paltry idea of establishing nothing but little farms, is the result of most impolitical ideas respecting population, which ought never to be the object of a moment's attention. If it exist idle, or beyond the proportion of employment, it is the source of poverty and wretchedness; it is valuable only in proportion to regular and active employment, and you will have an industrious active population in spite of every obstacle. But small farms and little divisible properties, increasing the people, without increasing employment, has no other tendency than to propagate idle beggars, and to disseminate modes of husbandry, calculated to exhaust the land, and keep its cultivators in misery. This is not theory but fact, of which almost every province, in France, abounds with glaring instances. But of this more in another chapter.

There is another sort of waste land, that abounds also very much in France, I mean marshes: it is asserted, that there are from 1,200,000 to 1,500,000* arpents of them in France. The improvement of these is vastly more expensive and more difficult than that of *landes*, heaths, moors, &c. The drains demanded for them require a considerable capital. These ought to be converted to meadow and rich pasture, by means of draining. Where they admit it, the cheapest improvement of such is by irrigation; the general drainage of great marshes, if not trusted by the assemblies of the departments to the conduct of some one able director, should be done by commission by constituting a company, as in England, and paying the expense, by a tax on the lands drained. If the rage for small farms continue, these marshes, in proportion as the soil is boggy, will admit of being divided into small portions, that is, of 30 to 60 arpents, but it should be under an absolute prohibition of the plough. The bog, which I saw in passing from Auvergnac to Nantes, and which seems, from its appearance on the map of Bretagne, to be of a vast extent, is highly susceptible of improvement, and every acre of it might be converted into rich meadow.

LUCERNE IN FRANCE.

From Arthur Young's Agricultural Survey of France.

PICARDY—*Boulogne.*—Lasts twelve to sixteen years; three cuts, very fine and thick; sixteen pounds of seed per measure, about an acre; four or five horses kept for five months.

Breteuil.—Value it more than corn; three cuts; in spots four feet high; lasts ten years; first cut for horses, the rest for cows.

ISLE OF FRANCE—*Arpajon.*—Much; three cuts.

ROUSSILLON—*Bellegarde*—Watering shortens its duration; give it water every eight days when there is no rain.

Perpignan.—Watered lucerne in all the bottoms.

Pia.—By far the richest crop, and most profitable culture; it is sown largely on two sorts of land the dry stony poor soils that are watered, and also on the rich deep friable loam in the vale between Pia and the calcareous northern mountains, which are not watered; in all cases it is sown broadcast and without corn. It is cut, for the first time, the end of April; and, if watered every forty days afterwards, to the amount of five cuts in all; if the land be not watered it is cut thrice with a full product; and a fourth time with an inferior one. If watered it does not last above seven or eight

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* Rapport du Comité d'Agriculture, &c. 7 Fev. 1790. par M. de Lamerville, deputé de Berri. p. 3. De la Necessité d'occuper tous les gros Ouvriers, 1789, par M. Boncerf. P. 3.

years, but in other land twenty and even thirty years; the hay is preferred to all others; a minatre is worth 6 louis at four cuts (5*l.* 9*s.* 4*d.* per acre); I walked over many fields of it, and found the crops beautifully clean and luxuriant, of a complexion and product very different from what is ever seen in England, but not equal to that of Barcelona in height by a third. Perpignan to Villa Franca, take three crops of wheat after lucerne.

Sijean.--Yields two cuttings in dry years, and four in wet ones; lasts ten years.

LANGUEDOC—*Caussan.*—Fine; under mulberries; from thirty-six sesterées get an hundred septiers of seed; the sesterée is sown with 100 lb. of wheat; the price last year was 50 liv. the septier. Vale land under lucerne lets sometimes at 40 liv. to 72 liv. the sesterée; corn land only 15 liv.

Pezenas.—Lucerne every where; lasts ten or twelve years; is excellent for every thing except sheep, for which animal it is too fattening.

Pinjan.—Sow 15 lb. the sesterée; always alone; cut five times a year, and lasts fifteen years, yielding 1200 lb. dry hay each cutting; and the seed of a sesterée has yielded 100 liv.; the the present price of the seed is 45 liv. the quintal, and of the forage 40*s.* When it is weedy they clean it by ploughing in the winter with a narrow pointed share, choosing frosty weather, which kills the weeds, but not the lucerne; an admirable practice, and apparently the origin of Rocque's harrowing, if it extend into Provence, his country. When it is worn out, their conduct is no less excellent; greatly as it improves the land, they do not venture to sow wheat, but barley and oats for hay, not corn, for two years in succession; a great deal of lucerne, pushing from the old roots, would considerably injure any corn, but add equally to the value of a crop of forage, as they call it; and the mowing early cuts off abundance of weeds; after these two crops they sow wheat, which proves very fine.

Lunel.—Much lucerne, but not fine, for the soil is inferior.

Carcassonne.—Cut it four to six times, according to rain; lasts 10 to 14 years.

GASCOIGN--*St Vincents.*—Cut in good years thrice, in bad ones twice; much over-run with couch.

Fleuran.—A few small pieces used for soiling horses.

Estafort.--Cut four times for soiling horses, and it is the best food of all for them.

Landron.—See a small piece of lucerne, but no other in the rich vale of the Garonne.

POITOU—*Poitiers.*—Lasts fifteen years; use it both for soiling and hay, which is better than that of saintfoin.

TOURAINE—*Chantelope.*--The Duc de Choiseul's cows always tied up the year round; in summer soiled on lucerne, which gave cream and butter of the very finest flavor.

Blois.—Pieces of it on a poor and almost blowing sand; lasts five years; cut it thrice; and the produce more valuable than corn.

Orleans.—Lasts eight or nine years, and is cut thrice.

ISLE OF FRANCE.—*Petiviers.*—Lasts twelve or fifteen years.

Melun.—Much here; lasts ten years; it is cut thrice, and the produce more valuable than wheat.

Yersaint.—Cut thrice; the first yields 400 bottes of hay; the second 200; the third 100; in all 700 (about 4 tons per acre), and the selling price 20 liv. the 100: or 140 the arpent. The finest of all their corn crops are those which succeed it.

To Montgeron.—It is the best feature of their husbandry. Sow 22 lb. of seed per arpent, with oats. It lasts twelve years. The price, at present 20 liv. the 100 bottes. When they break it up, they sow oats, and then wheat, getting by far the finest crops they ever experience.

Liancourt.—Cultivated in considerable quantities. Sow 30 lb. of seed per arpent, at the average price of 20 to 24*s.* the pound. Mons. Prevost a very intelligent and understanding farmer in the vale of Catnoir has remarked a great difference between the seed of Provence, &c. which is commonly sold in the north of France, and their own. The former rarely succeeds so well as their own, which he attributes to the great difference of the climate: with their own seed they never fail.—The general custom is to sow it with oats. It lasts with tolerable management, ten or twelve years; but on a rich deep soil, on a dry bottom, it has been known to reach the duration of twenty years. To destroy the weeds which arise in it, they harrow it partially with iron toothed harrows, and manure it with rotten dung. It is always cut three times a-year, and sometimes four; but that is not common: a very good arpent would let at 150 liv. a-year, which is more than any other production in the country. The finest of all may give 1600 bottes of hay, each of 12 lb. or 19,200 lb. which is above seven tons the English acre. In general the crop may be reckoned at 500 bottes, at two cuts on a mine, or 1000 the arpent, which is 12,000 lb. or better than five tons per English acre. The price of it does not equal that of good common hay; nor is it reckoned so good for horses. At present it is not worth more than 20 liv. the 100 bottes; they save seed of the third growth, and reckon 200 lb. per arpent a middling crop. Seeding does not destroy it: on good land it is just as good after; but sometimes on poor land it is injured. A vast object in the culture is the great improvement it works in the land; when they plough it up, they do not venture to have wheat, as the luxuriance would be such that the product would be all straw. They take two, three, four, and even five crops of oats in succession, which are prodigiously great; and when the oats decline, they sow wheat, and get a very fine crop!

Marenne.—Lasts twelve to fifteen years; cut thrice: when ploughed up, sow two crops of oats, and then wheat, all sure to be excellent.

Pontoise.—Near the town half the land is under it.

Brasseuse.—Commonly sown with oats that succeed wheat, and often upon one ploughing only; yet such is the happy texture of the soil, a fine friable sandy loam, that it succeeds tolerably well, and would, with better husbandry, yield an immense advantage; it lasts ten or twelve years, and longer when taken care of. They cut it thrice a year. It yields, at the two first cuttings, 300 or 400 bottes per arpent of hay fit for horses, and the third is for cows. Madame la Viscountess du Pont, sister of the Duchess de Liancourt, has possibly more lucerne than any other person in Europe. She has 250 arpents 80 of which were mowed this year. I saw the hay, and never met with better

or sweeter, yet botted from the field in the method universal in France. She was so good as to inform me, that no food for cows yielded finer butter; I tasted it, and none could be better flavored.

Dammartin.—Much; lasts nine years; cut thrice, unless for seed, in which case, twice only. The first cutting yields 400 or 500 bottes; the second half as much. The Archbishop of Aix, who has an abbey in the neighborhood, has taken great pains to spread the culture, and has occasioned near 800 arpents being sown.

Soissons.—Lasts eight or nine years; cut thrice; yields at the first 300 bottes of hay, of 12 lb.; at the second 250; and at the third 100 per arpent, of 96 perch, of 22 feet, 46,464 feet (3 tons 3 cwt.)

ARTOIS—*Recousse.*—They have some; cut thrice; lasts twelve to fifteen years, and reckoned excellent.

NORMANDY.—*Coutances.*—In the way to Granville many patches, the first I had seen in Normandy, and they increase to pieces of some consequence; lasts twenty years, and is constantly cut thrice.

La Roche Guyon.—Much cultivated; the Duchess d'Anville has fifty arpents, and a farmer in the neighborhood forty-seven; and I saw some good pieces in going to Magny; it is cut thrice, but does not last more than six years; sow it with oats; when broken up, they take three crops of corn in succession; in the open fields every body turns into it the 1st of November.

ISLE OF FRANCE—*Nangis.*—Seed 20 lb. an arpent de Paris, at 12 to 20*s.* the pound (26 lb. the acre); sow it with barley or oats that follow wheat; lasts six years, if manured, eight; a good arpent yields three hundred bottes the first cut (1 ton 14 cwt. per acre), two hundred the second (1 ton 3 cwt.), one hundred the third (11½ cwt.), each of 10 lb. (in all 2 tons 8½ cwt.); some sown alone on a clean fallow in August, and this is by far the best; the hay 20 to 30 liv. the hundred bottes (2*l.* 3*s.* 8*d.* a ton); if let it is at 40 liv. (2*l.* 2*s.* per acre); when they break it up, two crops of oats, and then one of wheat, and all good.

Meaux.—When oats have two leaves, they harrow in the lucerne seed 20 lb. per arpent (100 perch 22 feet) (17 lb. per acre); the price per lb. 4 to 10*s.* usually 6*s.*; the first year it produces, the first cut, but one hundred bottes per arpent, afterwards four hundred (2 ton 2 cwt. per acre), some five hundred, each of 12 to 16 lb.; the second cut two hundred (1 ton 1 cwt. per acre), the third one hundred (10½ cwt. per acre), in all 3 tons 13½ cwt. the hay of the first cut is given to horses, the second to sheep, and the third to cows; it is never manured; but the soil is a deep rich loam, that is to be ranked among the finest in the world; couch is the greatest enemy to it; they never use it in soiling, but always for hay; for mowing, making, cocking, and carting, 10 liv. the arpent; all is botted in the field. They are now (July 3,) mowing the first growth, but some has been cut some time; nothing, they say, improves land so much; all the good oats that Mr. Gibert showed me, at Neufmoutier, were after lucerne; the difference between those, and the other crops after wheat, being that of yellow and green.

DAUPHINE—*L'Oriel.*—Prepare for it with the spade, at the expense of 12 liv. the septerée; dung well; lasts five years; after that time, if they would preserve it, they plough it across with a little plough, called a *binet*, to destroy the grass, and then it succeeds for two years more. When they break it up, they take five crops of wheat in succession. I expressed my amazement at this execrable management; and Mons. Faujas de St. Fond attested the truth of the fact. If wild oats came the third year, they sow oats or rye instead of wheat, on that account.

PROVENCE.—*Avignon.*—Much; it is usually sown alone in March, 5 lb. of seed per eymena of 21,600 feet (10 lb. per acre); cut four, five, or six times, and lasts seven or eight years if much watered, ten or twelve if less; they then plough it, and find the amelioration so great, that they take five, six, seven, and even eight crops of wheat in succession! But, bad as such management may be, it is not, however, to be classed with a similar rotation among us, for water works miracles: and the wheat harvest is so early, that it affords time for what they please. Lucerne suits light rich land best; the produce at every cutting twenty-five quintals (3 tons 3 cwt. per acre); but for this it must be dunged as well as watered, which must be done in winter, after the frosts are gone; if no dung fifteen quintals (1 ton 5 cwt. per acre); the price 40 to 50*s.* the quintal, being 10*s.* below meadow hay. They reckon the hay bad for horses, blowing them up too much, but excellent for all other animals: I saw some of it at Avignon so beautifully green, that I felt it to ascertain if it were really hay, and not, as my eyes told me, fresh cut; it is sometimes let, and rents from 20 to 60 liv. the eymena (60 liv. is 4*l.* 12*s.* 9*d.* per acre); at five cuttings the produce per acre in money is £21. 13*s.* 2*d.*

Hyeres.—I viewed a new plantation making by Mons. Battaile; the piece contained one and a half acre English, and he was working it at the following expense: First digging, 96 liv.—Burning roots, weeds, clods, &c. 96 liv.—Dunging 120 liv.—Second digging, 96 liv.—Seed, 60 liv.—Total, 468 liv. or 13*l.* 13*s.* per acre. It was left quite smooth and fine to the depth of a foot, free from every sort of root weed, and laid in beds ready for watering, and now (September) sowing; next year he will cut it four times, afterwards five, and perhaps six; it will last fifteen years, and possibly twenty; could let it at 400 liv. a year (11*l.* 13*s.* 7*d.* per acre), and the produce gross 500 liv. (14*l.* 11*s.* 11*d.* per acre); and when broken up it will give great crops of wheat.

Observations.—The culture of the plant under our consideration, is one of the principal features of French husbandry. We have gone to the French school for the culture of it, yet it is ill managed, and with bad success in England, and has been so in every period; but in France, even in climates similar to our own, it is an object of almost uniform profit; and it must therefore be unfortunate indeed, if we do not extract something from the French practice deserving our attention and imitation. The first leading circumstance that demands our attention is the unvarying practice of sowing it broadcast. The lucerne in Spain which is of a luxuriance we have no conception of, and the little I have seen in Italy, is all sown in the same way; a contrary practice, namely, that of drilling has very generally taken place in England; it has been repeatedly urged, that the humidity of our climate renders hoeing necessary to keep it free from the spontaneous grasses; and, if

hoeing is necessary, drilling is certainly so. But this necessity is not found to take place in the north of France, the climate of which very nearly resembles our own. After some years, those grasses destroy it there as well as here; but the French think it much more profitable when that happens to plough it up, than to insure a longer possession by perpetual expense and attention.

A Frenchman from Provence (Rocque), introduced this broadcast culture of lucerne, about twenty-five years ago into England: I saw his crops, which were very fine, and equal to any in the north of France. Mr. Arbuthnot, of Mitcham had it also in the same method on a large scale, and with considerable success; other persons have succeeded equally well, whose experiments may be found in the registers of my agricultural tours through England; the method, however, has not been generally pursued; and the little lucerne to be found in England is chiefly in drills. It certainly deserves inquiry, whether this is not the reason of the cultivation at large not having made a greater progress with us. The introduction of hoes and horse-hoes among crops that are cleared but once a year from the land, and with no necessity of mowing them close to the ground, appears to be much easier, and more practicable, than hoeing and horse-hoeing a meadow cut and cleared thrice in a year; and which must of necessity be mown quite closely. The preceding minutes seem to allow the conclusion, that the drill is not necessary for this culture; the broadcast succeeds well in every part of France, in proportion to the goodness of the soil and to management, like every other crop.

I wish not to make this a didactic work, or I could offer hints that might be of advantage possibly to the culture in England; I should apprehend that a turnip or cabbage fallow is the right preparation; if the field be foul for two years in succession, fed on the land, sown with barley or oats three-fourths the common quantity of seed, say two bushels; should weeds appear the first year, I would bestow 10s. per acre in drawing, weeding or otherwise extirpating them; and after that the lucerne should take its chance. Explanations are endless; a hint is sufficient for the practical husbandman, without prejudices: I would never manure till the crop was two years old.—Its ameliorating effect is a singular feature in the preceding notes; the accounts are such as will surprise some persons; but where husbandry is not very well understood, effects so remarkable must be estimated with caution; and it may, without danger of deception, be admitted, that a material reason for this apparently exaggerated merit is, that fallows are the common preparation for wheat. If the French were well acquainted with the culture of clover as a preparation for wheat, nothing very marvellous would be found in lucerne. The intelligence at Pinjan indicates, in this respect, a conduct that is truly excellent; taking a tillage crop of fodder, winter tares for instance, on the first breaking up, is a practice that merits the greatest commendation.

THE WONDERFUL CALIFORNIAN WHEAT.

As we expected, and as our readers might have inferred from our remarks on this (not new, but revived) capital subject for the operation, the Californian wheat humbug has been started, with as sanguine expectations and efforts, and as fair appearance of success, as if it were the earliest, instead of being the latest humbug, and as if this wheat itself had not been already several times before the public, and cried up as a wonder of productiveness; and, when its worthlessness had been established, the subject dropped, to be forgotten, and remain unknown, until brought forward again, for a new race, to end in like manner.

The American Farmer, of Sept. 30, contains an account of this wheat, and an engraved representation of a head; and a wonderful head it certainly is—a whapper—big enough to induce, by the publication of this pictnre alone, a hundred orders to be sent to the proprietor and salesman, unless he has spoiled his market by fixing so very low a price as five dollars for each head of wheat. This is surprisingly low—indeed, dog-cheap—for a wheat which (according to the statement copied in our last number) produces at the rate of 230 bushels to the acre on poor sandy land, without manure.

While the sheet containing our remarks on this wheat was passing through the press, we received the letter which will be copied below, (omitting the writer's name,) accompanied by two heads of the Californian wheat, which we declined receiving under the conditions proposed. The ears were not to compare, for size, with that afterwards pictured in the American Farmer. The few short or secondary heads shooting out at the lower extremity of the principal and upright head, were in the same plane with it, and not surrounding it, as appears in the engraved representation, and as in the Egyptian wheat, of which we witnessed a fair and fully extended trial some thirty-five years ago. But notwithstanding this small difference, we have no doubt that the Californian and Egyptian wheat are the same, or from the same original stock; and we know that the latter is not only no monster of productiveness, but that it has been abandoned, as worthless, by all who tried it. At pages 51 and 52 of Vol. vi. of Farmers' Register, we gave, as one among sundry other humbugs, a conspicuous place to, and a full account of, the real and well ascertained character of this Egyptian wheat. But all the exposure that can possibly be thus made, in advance, will not kill or even cripple a humbug, much less cure the prevailing disposition of many of our countrymen to pay for their own personal experience therein. The article in the American Farmer (a letter to the editor) is as follows:

"I avail myself of the polite offer of our friend Gen. Steuart, to transmit to you an extract from a letter received by me this morning, from my early friend Alpheus Baker, esq., of Abbeville, South Carolina, a gentleman whose statements are entitled to implicit confidence:

"'The wheat to which you allude was brought to this place from the Osage nation, by Col. Spieren, who had been sent to them as a commissioner by the president of the U. S. Mr. S. brought seven heads; he gave me one: I offered him $5 a head for the other six, which he refused; but afterwards gave them all to me, to cultivate, and give him one-half of the crop, which I have done. I sowed the wheat on the second day of January, 1840, in my garden, in drills 18 inches apart in the drill. I believe every seed came up, and each seed produced a stool of from 20 to 50 stems or straws. Each head of wheat contains from 100 to 150 seeds; I forgot to tell you that the original head that Mr. S. gave me was not planted; that it was overlooked; and that I have it yet. There were about ten thousand heads produced from the six planted. The wheat was planted at least six weeks or two months too late; and some of it was injured by excessive rains and storms; but all who saw it agreed, that it stood the stress of weather better by far than any wheat in the country. They all agreed that, as a wheat, it was, when grown, indescribably grand. We sell the wheat at five dollars per head. If you think it would be a desideratum in your state, I will send you 1500 or 2000 heads.'

"My friend has accompanied this statement with the accompanying drawing of a head of the wheat in question, and subjoins a note that the grains are large and fair. As he has consulted me on the expediency of offering the seed for sale in Maryland, you would much oblige me by stating, at your earliest convenience, whether you think our farmers would be forward to any considerable extent in making so costly an experiment. Your obedient servant, WM. GEO. READ."

The next succeeding number of the American Farmer (Oct. 7) contains a letter from Dr. Gideon B. Smith, in which he, at considerable length, gives satisfactory reasons for pronouncing this "new species of wheat" to be identical with the often before exploded humbug, Egyptian wheat. He closes his remarks on it by saying—"During the twenty years of my agricultural experience it has been presented to my notice at least twenty times."

But to our own concern in this matter—or what it might have been—as will appear from the following letter, referred to above.

"——— *County, Va. Sept.* 24, 1840.

"Sir,—I have not had the pleasure of being personally acquainted with you, but know you from character, and have taken the liberty of sending you, by Mr. ———, two heads of the California wheat, which I consider very valuable, and for which I paid five dollars per head. You will see the terms I let it out upon, and if you feel disposed to take these two heads on the same terms, I should be glad for you to do so, as I have no doubt if you do, that you will take particular pains with it, and give it a good chance. I have no doubt, if it should grow as well in this country as it did where I saw it, that it can be sold readily next summer for one dollar per head, or perhaps more; that however has to be tried. They planted six heads of this wheat in rows 18 inches apart and about a foot between each grain, and raised 9500 heads, some having as high as fifty heads from one grain. It ought to be planted in next month, I think, in your section. If you are willing to plant these heads on the terms specified, copy the agreement, or sign this, and send it by mail to ——————— Virginia. Yours, &c. Very respectfully,

——— ———."

[*Blank bond enclosed.*]

"*Know all men by these presents,* that I, Edmund Ruffin, of the town of Petersburg, have this day received of A. B. of the county of ——— and state of Virginia, two heads of the California wheat, which I obligate myself to plant, and the increase of said wheat for two years, provided it should not all be sold the first year. I also agree *to use every exertion to sell the increase of the said wheat,* and I bind myself, my heirs, assigns, &c. to pay over unto the said A. B. or his representative at any time when called upon, one half of the proceeds of the increase of said wheat (i. e. whatever I may have sold) for two years, and render unto the said A. B. a list of those persons to whom sold. The said A. B. shall have the privilege of regulating the price of the said wheat, if he shall think proper. In case the said A. B. should at any time desire his half of the wheat raised either year, he or his representative shall have it on application, unless disposed of before by myself. Given under my hand this day of 1840."

Now, putting aside all other possible objections, which might have prevented our entering into this proposed agreement and copartnership, we really think that the proposer has asked and expected too much. In the first place, besides all the *superlative* care, and garden culture, which most other persons might as well execute as *we* could, he doubtless made a *proper estimate* of the advantages of our editorial character, which would give the greatest facilities for puffing, indirectly advertising, and selling a humbug article; and, in such a matter of business and bargain, we certainly ought to be paid for this item of advantage. Let us make an estimate, on his *own grounds of expectation,* as to price, and, for product, of the crop to which he refers, and see what an enormous price we should pay, and our partner receive, for his investment of two heads of wheat, and our nursing care of the products.

Taking the average of the statement of number of grains, copied above, these two heads, at 125 grains each, might have had 250 grains in all. Suppose, as in last crop, "every seed came up," and produced 20 to 50 stems, say average 35, (which, by the way, is not a very extraordinary product—as any common wheat may do as much,

under like treatment—) and each head to produce as before. Then 2 heads × 125 grains = 250, planted this fall will produce 250 clusters × 35 stems = 8750 heads—which if sold (by means of our editorial facilities for puffing) at the minimum of our correspondent's expectation, or at one dollar per head, would be $8750; or $4375 paid to him, clear of all expense and charge, for his two heads of wheat only. He will, from this, clearly perceive the injustice of the proposed arrangement, and that we would do much better to buy his two heads, even at the high price we advised in our last number, one dollar per grain, and then carry on the trade in planting, puffing and selling, upon our own bottom alone.

But this estimate does not go half way. Our "every exertion" was to be made for *two years* to cultivate and sell the product. And as our proposed partner was (by the bond) to have the right to fix the price, and thereby could thus restrict the number of the first year's sales, and consequently extend the quantity of the second seeding as much as he pleased—and as no one will suspect him of the folly of wishing to "kill the goose that lays the golden eggs" for him, let us suppose that he refuses to sell more than half of his first crop, (the concern receiving but $4375 the first year,) and therefore, that we should have to plant the remaining 4375 heads (we like to be exact in statements of things so precious,) and let us suppose the rate of product to be only half as much as before, and the price of the crop to be reduced to 25 cents the head, or, combining reduction of rate of product and price, to one-eighth of those of the first year. Then 4375 heads × 125 grains each = in product 545,775 clusters, × 17½ stems (half the previous product,) = 9,484,375 heads, which, at 25 cents per head, would amount to two millions, three hundred and ninety-two thousand, one hundred and sixty-five dollars, of which one half would be the share, and all net profit, of our proposed partner. We trust, therefore, that he will see the unreasonableness of his offered terms. For our part, we must frankly declare that we would almost as soon undertake to carry on the Florida war at our own expense, (provided we were to be sole contractor, as well as paymaster and commander-in-chief,) as to raise wheat for our correspondent, on the terms he has proposed.

ON MAKING OF MANURES.

By Colleton.

From the Southern Cabinet.

Mr. Editor,—I am surprised and astonishing at the improvement that is every day making in every branch of agriculture by the up-country planter, except that of the manuring system, which my experience has taught me ought to be the first object or of primary consideration on an up-country farm.

I cannot charge my neighbors with not knowing the advantages of manure, for it must be perceptible to the most careless observer. They all know it, and they all acknowledge it, yet, strange as it may appear, they all neglect it in a greater or less degree.

I have often been at a loss for a reason of this strange inconsistency, and have arrived at the following conclusion: The most of our up-country planters have too much land, and they can and do make tolerable crops without manure. I have special reference to their cotton crops. I know most of them manure part or all of their corn, but they do it with cotton seed, for which they deserve but little credit, as they are compelled to remove them out of their way, and the additional labor of applying them to the corn is very trifling.

I speak with a degree of confidence when I say, that within the circle of my knowledge, which embraces a considerable extent, there is not one out of ten who plant eighty acres of cotton, that manures ten acres out of eighty. The reason of this I believe to be, as I stated above—they have too much land. Most of our up-country planters plant from ten to fifteen acres of cotton to the hand. I feel confident from my own experience, when I say, if they would plant half of that number of acres, and manure them, the amount of their crops would be as much, or more, than they are now, or according to the present manner of culture. I state, from actual experience, when I say, that our up-country or pine-lands, when manured, will produce double the quantity of cotton. Perhaps it will be said, all this we freely admit and firmly believe, but how are we to make so much manure? In the first place the making of manure must be a separate and distinct business otherwise you will not be able to do it to advantage. Do not put it off for wet days or broken time. Too many have tried it in this way, and have invariably failed.

Put so many negroes with wagons and mules to collect trash,* and haul it into your cow-pens, stables, and hog-pens, and let the same hands haul it out. When it has been sufficiently trampled, two hands with a wagon and a pair of mules can rake and haul six wagon-loads of trash per day; that would be eight hundred and eighty-four wagon-loads in six months, and every one hundred wagon-loads of trash will make two thousand bushels of manure after it has been in the cow-pens six months, as two thousand bushels of manure to every one hundred wagon loads of trash would be seventeen thousand two hundred and fifty bushels of manure to eight hundred and eighty-four wagon-loads of trash. Seventeen thousand two hundred and fifty bushels of manure will manure forty-three acres of cotton, allowing four hundred bushels to the acre. I will now appeal to the planter to say, whether his two hands, with his mules and wagon, could make more, or be employed more profitably; and he may value the manure at six cents per bushel. He will remember to take into consideration the annual improvement of his farm by pursuing this system of culture.

*Leaves &c. which cover the ground in wood-land.—Ed. F. R.

If the above is worthy of a place in your *Cabinet*, it is at your service.

Yours, respectfully, COLLETON.

July 1840.

NATIVE NITRATE OF SODA.

From the Proceedings of the Boston Society of Natural History, 1840.

Dr. M. Gay read the following communication from A. A. Hayes, Esq., of Roxbury, on the Native Nitrate of Soda, found in South Peru.

The existence of beds of Nitrate of Soda in Peru has been long known, and the inhabitants of a most arid and desolate region have made it by simple operations an important article of commerce and manufacture.

This salt has claims of scientific interest quite equal to those of any mineral hitherto discovered. It indicates to us, who are accustomed to a humid climate, with heavy rain storms, a state of atmospheric dryness, as far removed from our experience as the singular products there deposited are from our own rocks and soils.

During the scientific tour of Mr. John H. Blake, of Boston, a great number of specimens, illustrating the forms and composition of this salt, were collected, and I have been able to learn some facts from the chemical examination of them, but have to regret that the loss of Mr. Blake's journal has prevented our having a full account of their geological relations.

The nitrate of soda exists in large beds, a few feet below the saline soil, or forming that soil in various places, from Arica on the north and west, to the course of the river Loa on the south. The country is an elevated pampa, having the form of a shallow basin, bounded by the coast cliffs on the west, by the higher pampas on the north, by sandstone hills on the east, and the ravine through which the river Loa falls into the sea on the south. The elevation of the pampa of Tamarugal in the province of Tarapaca is nearly 3300 feet above the level of the Pacific.

The western border or coast presents granite, on which the pale flesh colored feldspar porphyry, peculiar to volcanic regions, reposes. This rock is doubtless trachyte, and its extent and volcanic character make it one of the most important of known rocks. Imbedded in the soil and forming extensive tracts, are shells of the same species as those now existing in the ocean. A saline soil and other appearances denote that a long line of coast has been elevated from below the ocean's waters. In travelling north, Mr. Blake found that the pampas were broken by ravines, through which the waters from the Cordilleras flow at times. A remarkable feature is disclosed by these ravines; a section always presents a higher level on the north than on the south side, so that each pampa presents a *steppe*, rising as we advance northward. The sandstone hills forming the eastern boundary are of moderate elevation; they contain beds of gypsum, and form the western barrier of another basin, the eastern bounds of which are the Cordilleras.

The pampa is mostly uninhabitable, but spots where water can be obtained, and parts of the ravines are cultivated. Nearly midway between the eastern and western limits of this pampa there exists a buried forest of large trees, mostly of the Algorabo species. The trees are inclined towards the southwest, and the wood is singularly well preserved. Specimens have the color and grain of old mahogany, but are brittle. The gaseous constituents of recent wood seem to have been lost, for although resinous, it burns without flame. From personal examination of the country, east of the sandstone elevations, Mr. Blake concludes that a lake of considerable extent once covered the space between these and the Cordilleras. Numerous volcanic rents now exist among the mountains, and it is probable that the saline matter produced by them was dissolved in the water, forming a lake at the base of the mountains. This lake subsequently broke its barriers, and prostrated a forest then growing where the saline matter is now found. I have carefully examined the earthy matter which is mixed with the nitrate of soda from different parts of the province of Tarapaca and find that the larger part is composed of fragments of finely powdered shells, the color being unchanged. A brown marl forms the remainder, such as results from the washing of sandstone, —these facts I consider as supporting the conclusion of Mr. Blake. The surface of the pampa is mostly sand, clay, and saline matter. The latter is composed of sulphate of lime and soda, salt, and nitrate of soda—some parts present the nitrate of soda at the surface—at others, a few feet below. These salts have all the physical and chemical characters of salts produced by decomposition and separated by evaporation from solutions. The nitrate of soda is found in distinct strata, a thin layer of brown loam separating the parts; it is also found mixed with salt, and forming a small portion of the whole mass. The refining operations are rude and simple. The richest masses of the native salt are blasted or broken and divided into small portions; with these, copper kettles are in part filled, and water, or the mother water of former operations, is added, and heat applied until a boiling and saturated solution is obtained. The solution is transferred to wooden coolers, where the nitrate of soda crystallizes. The undissolved salt remaining in the kettles is thrown aside, fresh salt being used each time, although not one half of the nitrate of soda is dissolved. The coolers are emptied after the crystals of nitrate have ceased to form; it is dried, packed in bags, and sent to the coast on mules. The wood used in the operations is transported from a distance on the backs of mules from the borders of the pampa. Of late, attention has been turned to using the altered wood of the buried forest, and some excavations promised a supply. Water is found by sinking wells in some places, below the saline soil. The subsistence of the workmen, drivers and mules, is mostly drawn from Valparaiso. The quantity of nitrate of soda which exists in beds is immense, and in addition it is probable that the saline soil would afford a large supply.

Native nitrate of soda, in fractured masses, has a granular structure, arising from the aggregation of irregular rhombic crystals, varying from fine grained to coarse grained. It is brittle, but yields more easily in one direction, separating into angular parts, resembling loaf sugar closely, in some specimens. Color varies from snow-white to reddish brown and gray. Some specimens have a lemon

yellow tint irregularly distributed; specific gravity, 2.290; taste, nitrous, with a cooling impression; odor, peculiar, and when warmed resembling chloride of iodine dissolved in water.

Composition of average specimens is nitrate of soda 64.98, sulphate of soda 3.00, chloride of sodium 28.69, iodic salts 0.63, shells and marl 2.60,=99,90.

Mixed with this mineral, I have found nitrate of potash, sulphate of lime, chloride of sodium, iodate of potash or soda, and chloriodate of magnesia, the latter imparting the bright yellow tint which some specimens show.

CHEMICAL COMBINATIONS—ANALYSIS OF SOILS.

From the Southern Cabinet.

Mr. Editor,—I frequently find information requested on the subjects of the following paper, which has been my inducement for making them the topic of a few cursory remarks.

Many have vague ideas of the components of the material substances of which we are formed and by which we are surrounded. Persons are often deterred from particular inquiry into the sciences, by the apparent magnitude of the difficulties, and the numerous intricacies they present at the entrance. These obstacles are analogous to looming highlands, which appear to obstruct the traveller's way, and impede his further progress but with resolution he advances, and ere he is sensible, the extent and richness of the scene shows him that he has already overcome a portion of the difficulty, and at least partially accomplished his object. In this as in all things "*ce n'est que le premier pas qui coute.*"

The various objects which surround us, and strike our senses, would appear to be a mixture of heterogeneous substances, of infinite complexity, but upon inquiry we are the more and more astonished at the fewness of the original materials, and the simplicity of the limited laws which govern their history. As far as we have knowledge, this tangible world is composed of about fifty-six, or fifty-seven, simple elements, or substances, each having peculiar and particular properties, which are throughout marked, constant, and invariable, and will be found in all parts of the world to act in a similar manner, when under like influences. These elements are not susceptible of annihilation or reproduction; they have been created once and for ever. Variety is produced by the combination in different proportions of these simples, for instance: sulphur, or brimstone, is a simple substance, from which art has succeeded in producing nothing but sulphur, and is formed of insensibly small particles, or atoms of itself. Iron, copper silver, lead, gold, are other examples. These simples, when they do combine, are found to unite according to fixed laws, which are far from being complicated. Thus an atom, or proportion of sulphur, will combine with an atom, or proportion of iron, and form a compound with properties differing from those of either of its constituents. Again, under other circumstances, two atoms of sulphur will combine with one atom of iron, and form another compound, differing alike from either of its constituents, or the other combination. These two substances combine in the two mentioned proportions only, and neither nature, or art, have produced examples of their combination in other proportions. Hence, a substance possesses properties differing, not only from the number of its elements but also from their proportions.

These simples are æriform, liquid, solid, visible, or invisible, and have different specific gravities. Gases will sometimes combine and form solids—again liquids, or gases, according to the temperature. One atom of oxygen and two of hydrogen unite and form ice, water, or steam, at different temperatures. The combinations known as calomel, and corrosive sublimate, so different in their action upon the animal economy; are results of different proportions of mercury and chlorine. The transformation of farina, or starch, into sugar, alcohol, and acetic acid, (or vinegar,) is simply a change in the relative proportions of the three sole constituents of all—oxygen, hydrogen, and carbon. The Emperor Napoleon was fond of the simple beverage, sugar and water. He remarked when made from sugar in lump, particularly if permitted to dissolve itself, it made a perfectly clear solution, but if the sugar was pounded the liquid was turbid. He asked of Chaptal, (a chemist of celebrity,) an explanation, who replied that the three substances sugar farina, and gum, though composed in different proportions of the same simples, were so nearly allied that the abrasion caused an approximation of the sugar, to the nature of the other two substances, and farina being insoluble and gum less immediately so than sugar, the clouded appearance was caused by the suspension of the insoluble particles thus produced. The gas called carbonic acid, or fixed air, is a combination of five atoms of oxygen, and one atom of the well known substance carbon, which according to the arrangement of its particles presents the appearance of lamp-black, charcoal, and the crystallization diamond, all being susceptible of combustion, by which act they combine with oxygen, and produce the acid gas. Oxygen is found to combine in three proportions with iron, giving rise to compounds with distinct properties. Thus the magnetic oxide of iron, which occurs in the washes throughout this district, may be said almost to resist the action of acids, whilst the other oxides of the same substance combine with them with facility. Hence, the magnetic oxide is of less advantage in a soil than the combinations in other proportions, which correct acidity by saturation. In the fabrication of soap, if we place the carbonate of potash in contact with the grease, or oil, no soap will be formed, but if we previously divest the potash of its carbonic acid, (which is easily done with caustic lime,) the caustic potash produces a change in the proportions of the constituents of the grease, (oxygen, hydrogen, and carbon,) acids are generated, which combine with the alkali, and form the salt, soap. This informs us that if we fail to decarbonise our lie, we loose such proportion of alkali as may not have been deprived of its carbonic acid, during combustion, or by other causes, or having been deprived, has reabsorbed that acid from the atmosphere.

These elements, when they combine, do not unite in all proportions, but one is found to be a simple multiple of the other. Thus one to one, one to two, one to three, one to four, one to five, and rarely ever beyond this number, and never

in such proportions as one-seventh to one, or one-third to one-fifth, &c. &c. By reflecting upon these facts, and many more which might be here adduced, we shall realize the nature of atoms, their indivisibility, and the mathematical nicety in which substances chemically combine. This constitutes the basis of the Atomic theory, from which chemical equivalents, or proportions, are deduced, enabling the manufacturing chemist to calculate with the greatest exactness, the relative proportions of the different substances, he may wish to unite, to form the required product, and giving the analyzer the power of deducing the unknown from the known.

These simple substances variously combined, and these combinations variously intermixed, cause the different appearances which are presented to our senses in the vegetable, animal, and inorganic world. By taking advantage of our knowledge of the properties which these simple substances possess, as well as those to which their combinations give rise, we can form a pretty just conclusion of what will be discovered by accurate chemical investigation. To illustrate—we know that all vegetable substances are formed of three simples, viz.: oxygen, hydrogen, and carbon, and very rarely a fourth, nitrogen, which is found to exist in that product termed gluten, which may be extracted from the germ of wheat, to which add, the comparatively small proportion, of inorganic matter which is found in the ashes. Again, animal substances usually contain all the four first —I say usually, for there are exceptions to this as to all general rules, as grease or fat, (which is called the grossest part of the animal,) is closely allied to the vegetable oils, and formed of the same substances, neither containing the gas nitrogen ;—therefore, so far as the constituents are considered they do not differ. The properties of the substances which form the mineral kingdom, are not the less distinctly characterized, and by physical inspection with the aid of chemical tests, the operator is enabled to foretell all the constituents which will be found by accurate chemical research. This analysis may be said to commence from the time an object first arrests attention.

These facts may appear to some elementary, but I hope on that account not useless, and that they, therefore, may be pardoned by those to whom they are familiar, for the service they may be to others who have less acquaintance with the subject. They may furthermore be of some utility in enabling some of my readers, the better to comprehend, the one or two examples of analysis, which I shall now add.

I shall select for the first example, a mineral substance, in which we will suppose it desirable to ascertain the quantity of carbonate of lime. The commencement of this operation is its reduction to a powder, (which indeed is the first step in every case,) and this may be accomplished in a copper, or iron mortar afterwards passing it through a fine sieve. Then, by means of a small sensitive hand balance, weigh say ten grains; by selecting a decimal number the calculation will be rendered more easy. This should be placed in a small platina crucible, of a size adapted to the quantity, on a few ignited coals, and brought to that degree of heat when redness is just becoming visible. It should now be removed from the fire, allowed to cool, and reweighed. By substracting the number thus obtained from ten, you have the humidity. You now return the powder to the crucible, put on the cover, replace it on the fire and increase the temperature to a white heat, which should be maintained for about fifteen minutes. Suffer it to cool, and weigh. Subtract this from the last number, and it will give the quantity of carbonic acid driven off. It would be well now to ascertain by means of water, and acid, if this last operation has been effectual, and if it has not, it will of course be necessary to repeat the experiment on another equal quantity, till you have effected this end. Ten grains of the powder should now be introduced into a small glass matrass,* (for these operations those of the capacity of a gill, or half-gill, will be found most convenient,) cover it with water, and add a few drops of muriatic acid, from time to time, keeping up the action till effervescence ceases. If the acid be added too rapidly or too much at a time, the action will become so violent as to project a portion of the matter out of the mouth of the vase, in which case it will be necessary to recommence the operation on another like portion. In order to prevent any loss, the safest way is to incline the vase, that the spray may strike the sides. Towards the termination of the operation, the action should be aided by a gentle heat, and any excess of acid should be driven off by evaporation. The solution should now be diluted by the addition of water, and the whole thrown upon a paper filter, (which will retain the insoluble residuum,) and water added till every thing soluble is washed away. In washing, it is better to allow the water previously added to pass through entirely, before replenishing. If the water be hot, the operation will be more expeditious. You may ascertain if this is accomplished by receiving a drop from time to time, on a piece of glass and drying it over the fire, or in the sun; the washing is completed if it dries without leaving a spot on the glass.

The filter containing the insoluble residuum should now be carefully removed from its glass funnel, dried, and the matter separated, calcined, and weighed, or as it is scarcely possible to prevent loss in this way, it will probably be more accurate to calcine altogether, burn another filter of precisely the same size, and weigh the ashes, and make allowance for this in the weighing. To the filtered solution you now add lime water, until there ceases to be a precipitate. Lime being a strong base, will throw down bases of less strength. If no precipitate is produced by the lime-water, there is nothing in solution but lime, and the operation is terminated, and the quantity of lime may be ascertained by the difference between the weight of the insoluble residuum, and the powder which was deprived of its carbonic acid by calcination. But if there be a precipitate, the vase should be covered to prevent the absorption of carbonic acid, (which would unite with the lime and thus cause an error,) and when settled, drawn off clear, by decanting, or by means of a small glass syphon, and the precipitate collected on a filter and washed. By drying, recalcining, and weighing, and adding the weight of this precipitate to that of the insoluble residuum, and substracting it from the powder

* A small vase, technically so called, much resembling a Florence flask. Those with flat bottoms are best.

deprived of its carbonic acid, as before remarked, you have the quantity of lime.

By reference to a chemical, or mineralogical treatise, the composition of the carbonate of lime will be found given.—Now let A. = the quantity of lime in 100 parts of the carbonate of lime, B. = the quantity of carbonic acid, and C. = the quantity of lime ascertained by analysis, then the simple proportion A : B : : C : X = the quantity of carbonic acid necessary to saturate the quantity of lime found, which must be substracted from the loss by calcination. To recapitulate—your analysis will stand thus—

Water,
Carbonic acid,
Insoluble residuum (usually sand and argile,)
Precipitate by lime water (usually magnesia, oxide of iron and alumine,)
Lime.

This mode is one of the most expeditious and easy that presents itself to my mind at this time. In this, as in all analyses, it is of course necessary that all the re-agents used should be pure, without which there can be no certainty or confidence in the results. If the muriatic acid should contain sulphuric acid, as it is likely to do, owing to the usual mode of manufacture, the insoluble residuum will contain the sulphate of lime, thus not only augmenting it at the expense of the lime, but also by the addition of the sulphuric acid. Manufacturers often make use of the chloride of lime to whiten their paper, which is frequently found to contain notable portions of that base, thus introduced, so much so as not unfrequently to produce effervescence, by the application of an acid. This substance would not fail to be dissolved, by the slight excess of acid unavoidable in manipulation, and would be thrown down and add to the amount of the constituents. This, in an analysis where the filtrations are numerous, would cause error ; to avoid which the paper should be digested in weak acid, and washed to free it from all extraneous substances previous to use. Water is another frequent source of inaccuracy, if it be not pure. Distilled water is at all times preferable, or rain water (not collected from dusty roofs.) Sometimes the water of our rivers evaporates without residuum, as I have found occasionally to be the case with that of the Schuylkill. The operator will find it to his advantage to ascertain, by tests, the purity of the water and re-agents previous to use.

I shall now endeavor to enumerate the modes of separation which I should practise, were I about to examine a substance in which the constituents were more numerous. The following example is one analogous to many soils :—

Water,
Organic matter,
Carbonic acid,
Silex,
Alumine,
Oxide of iron,
Oxide of manganese,
Lime,
Magnesia.

I shall premise by observing, that where analysis can be performed without the use of fixed alkalies or their salts, as re-agents, it is always preferable, owing to the difficulty, (necessarily connected with their properties,) of freeing a precipitate of their presence, which is more embarrassing in those which are gelatinous than others. The operation of getting rid of their presence is long and tedious but necessary—as without it there would be inevitable error, more or less flagrant, as the manipulation is more or less perfect.

The water or humidity will be driven off by maintaining the powder at the temperature of boiling water some time. The organic matter by heating the substance to a red heat, in contact with the atmosphere, and occasionally stirring it to make the combustion more perfect—the carbonic acid by calcination. The solution should be made with muriatic acid. A few drops of nitric may be advantageous. The silex and argile, dosed together, as in the foregoing analysis, and separated afterwards by an attack in a silver crucible with caustic potash, or in one of platina, with carbonate of potash. To the filtered solution you now add the carbonate of ammonia, drop by drop. The iron and alumine, (if there be any of the latter,) will be thrown down together, in which case they may be separated by potash. The separation of these substances by the carbonate of ammonia is a nice operation, as the success of the experiment depends on the exact quantity of carbonate of ammonia added. The manganese will be thrown down by the hydro-sulphate of ammonia. In this case you have the sulphuret of manganese. If the quantity be small the sulphur may be dissipated by roasting, but if large it will be necessary to dissolve in nitric acid, and precipitate by a carbonate. The lime will be thrown down by the oxalate of ammonia, and the magnesia by the phosphate of ammonia. The phosphate of magnesia being slightly soluble, may give rise to error if this be not taken into consideration.

I am well aware that in manipulation, however perfect the description, nothing will compensate for the want of practice, and even were it my intention to describe all that was necessary to one possessed even of partial experience, the idea would be preposterous in an article like the present.

If I have erred in any of the foregoing statements, which, however, I do not think will be found to be the case, I hope it will be considered a sufficient palliative, when I state, that I write without having in my reach a note, or scientific volume, to which I can refer. C.

Abbeville District.

PEDESTRIANISM EXTRAORDINARY.

A most extraordinary feat of pedestrianism has been nearly completed by the celebrated Townshend, walking between this town and Prescott. This individual undertook for a bet of £50, to walk against time, the astonishing number of sixty-four miles each day, for six successive days. The great feat would almost seem impossible; but up to last night, he had regularly performed his day's task, with the exception of one day, in consequence of the Prescott police having taken him twice in custody, which retarded his progress considerably. On the following day, however, he made up for the loss he had sustained from the over caution of the "rural force," by walking seventy-two miles; and when it is considered that

this took place on the third day after he had started it cannot be looked upon otherwise than as wonderful.

In performing the given distance, he has to walk four times every day between the two places. As soon as he makes his appearance within the suburbs of Liverpool, he is constantly followed by great crowds (of whom he much complains) of anxious spectators, eager to look for once upon a man whose performance, when completed, will be one of the greatest feats of walking ever accomplished.

Mr. Townshend finishes his arduous task this evening; he will be in this town about 9 o'clock in the morning, half-past 1 in the afternoon, and 6 in the evening; he will then proceed for the last time to Prescot, and return to Liverpool at about half-past 10, which will complete this feat unparalleled in the history of pedestrianism.

Last night, when he arrived at Mr. Taylor's, Williamson-square, (at which house he has regularly slept, about five hours out of every twenty-four, going to bed at 12, and rising again at five,) he complained very much of his feet being sore, but his spirits seemed as buoyant as they were on the first day, (Monday.)—*Liverpool paper.*

CAUSES OF THE FAILURES IN REARING SILK-WORMS.

To the Editor of the Farmers' Register.

Fredericksburg, Sept. 1st, 1840.

The last number of the Farmers' Register contains (*to me*) unpleasant news relative to the general result of silk culture, in Virginia, during the past summer; but it is proper that these failures should be known, that persons intending to prosecute the business may provide convenient and proper fixtures, and exercise more care in time to come. Some of Dandolo's directions for the preservation of silk-worms' eggs are good, but others are unnecessary, and impracticable in our climate. As a specimen take the following:

"The linen cloths upon which the eggs are deposited may be left then in the same place, provided the heat of the room does not exceed 66° to 68°."*

Now, where in Virginia shall we find a place free *from dampness* that can be kept at a temperature as low as 68° "in July or August?" The eggs from which my rearings were made the past summer were frequently exposed to a temperature, a short time after they were deposited, as high as 85° to 88°, and yet the worms proceeding from these eggs were more thrifty than any *large* parcel that I have seen. The hatching of a portion of the eggs was retarded by placing them in the ice-house the 10th of February, and another parcel were buried under ground, and these too succeeded well. But I am not yet sure that this plan will retard the hatching as late as the 1st of August, because a thermometer occupying the same situation, under ground, stood on June 27th at sunrise at 67°, and on June 29th, at 2 P. M., at 68°. The plan which I adopt for retarding the hatching differs in some respects from any that has hitherto been made public, and as it is probable that some of your readers may wish to try it, I will send you an accurate description in November or December.

I will state my opinion relative to the causes of failure in rearing silk-worms during the past summer:

1. Closing too many of the windows and ventilators of the room in warm and damp weather.

2. Crowding the worms so as to prevent their feeding with regularity, and which also checked proper transpiration. Hear Dandolo on this point. "It must be acknowledged that transpiration cannot exist without the contact of air. The health of animals requires that they should expel, by means of the excreting organs, the superabundant liquid and extraneous substances, which may have been introduced into their organization by nutrition."

3. *Wide* hurdles or shelves and narrow passages have been a fruitful cause of disease when in other respects the management may have been very good. These wide hurdles with narrow passages render it impossible to expel the large quantity of *carbonic acid* generated, with that uniformity and rapidity required to ensure health.

Hear Dandolo on this point also.

"The quantity of *carbonic acid* which is discharged by the silk-worms is in greater proportion when the worms are numerous, when the temperature is high in the laboratory, and when the atmosphere is laden with moisture. This same acid is well known to be heavier than the atmospheric air; and it would fill constantly the regions of pure air, which are in immediate contact with the silk-worms, *if care were not taken to establish currents of air to expel it.*" (Note at page 265. London edition, 1825.)

The success of Count Dandolo in rearing silk-worms in 1814, when, as he says, "the crop of cocoons generally failed in Italy," is mainly attributable to the ample space allowed the worms, and the means which he possessed for a very *free ventilation.* This of course is nothing more than my opinion, and it may pass for what it is worth. These statements have reference only to cases where the worms were healthy *when hatched.* The best arrangement and management can avail nothing for worms from diseased eggs.

An opinion, that rearings of silk-worms are more precarious in *large* cocooneries than in *small* ones, has prevailed to some extent, both in Italy and in this country. In Virginia especially, this objection has been zealously urged by those who contend that the culture of silk cannot be pursued with *profit* on an extensive scale.

Facts stated by Dandolo stand in direct opposition to this opinion.

"In general the laboratories of the tenants, farmers and common cultivators, have the appearance of catacombs. I say in general, for there are some few, who, although they may not have all the requisites of rearing silk-worms in perfection, yet have care sufficient to preserve the worms from any very severe disease.

"I have often found, on entering the rooms in which these insects are reared, that they were damp,* ill-lighted by lamps fed with stinking oil,

* Dandolo's treatise, p. 234. London edition, 1825.

* Some persons have supposed that closing the windows and ventilators in rainy weather protected the worms from dampness. This error has destroyed millions of silk-worms.

the air corrupt and stagnant to a degree that impeded respiration, disagreeable effluvia disguised with aromatics, *the wickers too close together*, covered with fermenting litter, upon which the silk-worms were spinning. The air was never renewed except by the breaches which time had worn in the doors and windows; and that which made this seem more sad and deplorable, was remarking that the persons who attended to these insects, however healthy they might have been when they entered on the employment, lost their health, their voices became hollow, their hue pallid, and they had the appearance of valetudinarians, as if issuing from the very tombs, or recovering from some dreadful illness."—(page 303.)

"The silk-worms succeed better in the great laboratory, and form finer cocoons.

"The total result will show that the great laboratory is less expensive, and better overlooked, consumes less leaf, preserves the worms better from the attacks of disease, and affords an abundance and fine produce of cocoons." M. Dandolo observes, that having reared silk-worms, in large, middle-sized, and small laboratories, the cocoons of the large laboratories were *invariably* of superior quality. "Neither is it liable to breed so great a quantity of *carbonic acid gas*, or mephitic air, so peculiarly noxious to the silk-worm, as the small laboratory."—(Note, page 298.)

I have recently ascertained that the mortar or lime from an old building, when used as a surface dressing, will produce a growth of white clover. In the spring of 1838 a cart load of this compost was thrown on a piece of land that produced nothing but hen's nest grass, and a very feeble growth of that; in June last a beautiful growth of white clover covered the spot whence the compost had been shovelled off and applied to some trees a few steps distant. When I wrote you some time ago on the subject of marling this spot was overlooked. LAYTON Y. ATKINS.

POSTSCRIPT.

Among the causes which have contributed to failure, in many of the attempts to rear silk-worms during the past summer, the retarding the hatching of eggs by ice-houses, or otherwise, may be named. The cause, however, of disease, must be sought for in the manner of retarding, or in the circumstances of the eggs, either before or after they were subjected to the process. If, for example, eggs had been placed in a refrigerator or ice-house in January or February, and the package containing the eggs was opened frequently in March, April and May, for the purpose of withdrawing portions for hatching or for sale, the condition of the remaining eggs would be changed by the sudden introduction of the atmosphere, so as to render it dangerous to subject them again to the full operation of the retarding process. My experiments, made the present season, prove that eggs may be safely retarded until late in June, full two months beyond the *natural* period for hatching. This period, in Virginia, in latitude 38°, varies from the 20th of April until the 15th of May. In 1836 it occurred the 5th of May, in 1838 15th of May, in 1839 5th of May, and in 1840 20th of April.*

If the winter state of the eggs may be prolonged until the 20th June, I think it fair to infer that it may be extended to July or August. Mr. McLean, of New Jersey, has succeeded in retarding the eggs until the last named periods. But this is an important subject, and time, with oft-repeated experiments, alone must furnish *facts* on which *positive* conclusions may be based. In the mean time a free communication of *facts* and opinions from persons engaged in rearing silk-worms is very desirable.

There is another cause which I believe has produced numerous failures in attempts to rear late broods of silk-worms, which deserves notice. In all early rearings it is well known that the worms and the leaves of the mulberry advance *simultaneously* towards maturity; and hence the worms have leaves suited to their different ages. But in many cases, when *late* rearings have been attempted, the leaves have been fed to the worms promiscuously, and consequently the *young* worms have been compelled to eat leaves not containing the kind of nourishment suited to their delicate organs when first hatched. I know it has been asserted that the young silk-worm will devour voraciously the toughest leaf; but because the worms will eat such leaves to escape starvation, it should not be inferred that it does no harm. A little reflection, I think, should convince us that it is unreasonable and unnatural.

The following quotation from an article translated from the French, and published in the Farmers' Register, tends to confirm the opinion expressed above.

"On the other hand, if the putting forth of the leaves is backward, and it is followed by heat that lasts long, as may usually be expected, and yet if but little heat is kept up in the laboratory, the worms will advance slowly and their growth will be prolonged. *Still the leaves grow and become harder, and have too much consistence for the worms, in their backward state.*" This, then, is a state of things in which the growth of the worms should be hastened by continued high temperature, in order that their progress may be brought up to that of the leaves, which is an essential point."

I will only add that the object of the French writer may be obtained without raising the temperature, or without the use of artificial temperarature at all, viz.: by selecting the most tender and succulent leaves for the first ten days, reserving the toughest for the last age. I have pursued this course for *five* years, and have only had *one* late rearing that was diseased.

The hatching of silk-worms' eggs had been retarded until first of August in Italy, prior to the year 1778, and consequently is not a discovery of American ingenuity. The discovery was of no use to them, because the rearing of late broods was prohibited by the government, to prevent the destruction of the mulberry trees. (See Farmers' Register, vol. vii. p. 274.)

* These periods were ascertained by leaving eggs exposed to all the changes of the weather, in our cocoonery during each preceding winter, with the exception of 1836. The eggs for that year had been kept in an upper room in Fredericksburg.

SALT-WATER FISH NATURALIZED IN FRESH-WATER PONDS.

From the Proceedings of the Boston Society of Natural History, 1840.

Dr. Storer presented the following report on the fishes referred to him at the last meeting of the society.

The fishes presented to the society at its last meeting, as having been taken from the Jamaica pond, about five miles from this city, are the *Osmerus eperlanus*, common smelt. You may be surprised at the circumstance of salt water fishes being taken in a fresh water pond entirely disconnected with the sea. During the preparation of my report upon the fishes of Massachusetts, I learned from Benjamin Weld, Esq. of Roxbury, it was generally understood that the smelts found in Jamaica pond, were originally placed there by Governor Barnard. Investigating this subject, to procure some certain data, I met with the following extract, in a note, by Daines Barrington, the then vice president of the Royal Society, to a letter from John Reinhold Foster, "on the management of Carp in Polish Prussia:" "I have been informed by Sir Francis Barnard (the late Governor of New England) that in a large pool which he rented not far from Boston, and which had not the least communication with the sea, several of these fish, originally introduced from the salt water, had lived many years, and were, to all appearances, very healthy."* As I have never heard of this fish having been taken in any other pond in this neighborhood, there can be but little doubt that the "large pool" referred to in the above note, was Jamaica pond.† The specimens you perceive are considerably smaller than those purchased in our market—all that I have seen from this pond, for the last year, are smaller than those commonly met with. From the quantities yearly taken, however, they must have *increased considerably in number*; and their *flesh has lost nothing of its sweetness or flavor*, as I have repeatedly had opportunities of testing.

This is the only experiment, so far as I am able to learn, which has been made to transport marine fishes to fresh water, in our country. It has proved that this species can bear the change, and that it will increase in numbers in its new locality. In many ponds in our state more favorably circumstanced, better supplied with food, this fish would undoubtedly retain its usual size. In a highly interesting paper, entitled "Hints on the possibility of changing the residence of certain fishes from salt water to fresh--by J. MacCulloch, M. D., F. R. S.," we learn that this same species, the *smelt*, has been kept by Mr. Meynell, of Yarm, Yorkshire, in a fresh water pond for four years, having no communication with the sea, and they *grew well*, and bred as freely as under other circumstances.‡ In the valuable communication of Dr. MacCulloch, just alluded to, several other species of fishes are mentioned as having been transported in a similar manner, and he observes that the flavor of every fish has been improved by the change. "The *sole* becomes twice as thick as a fish of the same size from the sea. The *plaice* also increases materially in thickness: in some cases, it appeared three times as thick as in the sea. The *barse* also turns much thicker, and improves in delicacy. The *mullet* almost ceases to grow in length, but enlarges in breadth, and presents a much deeper layer of fat."* No one can give this elaborate paper, which I have merely referred to, a careful perusal, without being satisfied that our own ponds, many of them now utterly useless, may be made rich repositories of numerous marine fishes.

Several instances might be referred to of fresh water fishes being transported successfully, not merely to neighboring ponds, separated from each other by a few miles, but also from countries even in very different degrees of latitude. The *Cyprinus carpio*, common carp, originally from the central part of Europe, is now distributed through almost all its ponds, rivers and lakes—and I have previously stated to this society, that a pond in Newburgh, N. Y. was stocked with English carp.† The *Osphromenus olfax*, a native of China, has been introduced into the Isle of France, where it increases rapidly, and has been taken thence to Cayenne.‡ The *Cyprinus auratus*, so generally known as the *gold fish*, the native of a lake in China, in about the 30th degree of latitude, has been introduced and naturalized in the Mauritius by the French, where they now abound in the fish ponds and streams; they are completely naturalized, and are found in large numbers in many of the streams of Portugal, whence they are carried to England by trading vessels from Lisbon, St. Ubes, &c. in large earthen jars.§ It breeds freely in small ponds and even in tanks in England.‖ Numerous ponds in Massachusetts abound with them, notwithstanding the severity of our winters.¶

The only instance with which I am acquainted of a fresh water species being removed from one sheet of water to another in this country, is that of the *Perca flavescens*, yellow perch; and for this successful attempt we are indebted to the zeal and perseverance of the late Dr. Mitchill, of New York, whose paper on the fishes of New York, published in the transactions of the Literary and Philosophical Society of New York,** is of great value to the American ichthyologist. He first published an account of his transporting the *perch* in the "Medical Repository,"†† and afterward referred to it in his paper just spoken of. From the original statement I extract the following remarks: "In 1790, Uriah Mitchill, Esq., high sheriff of Queen's county, and myself went to Rockonkoma pond, in Suffolk county, a distance of about forty miles, in a wagon. The object of our journey was to transport alive some of the *yellow perch* with which this body of water abounds, to Success pond, in the town of North Hempstead. We took about three dozen of those which had been wounded most superficially by the hook, and were so fortunate as to dismiss all of them but two into

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* Philosophical Transactions Vol. 61, for the year 1771, p. 312.

† I have ascertained since writing the above, that Gov. Barnard's residence was on the border of Jamaica pond.

‡ Quarterly Journal of Science, Literature and the Arts, Vol. 17, London, 1824. Also, Yarrell's British Fishes, Vol. ii., p. 77.

*Quarterly Journ. Science, Lit. and Arts, Vol. 19.
† Silliman's Journal, Vol. 36, p. 342.
‡ Griffith's Cuvier, Vol. 10, p. 220.
‖ Yarrell's British Fishes, Vol. 1, p. 316. § Ib.
¶ State Report on Fishes of Massachusetts, p. 82.
** Vol. 1, p. 422. †† Vol. 3, p. 422.

Success pond, in a condition vigorous enough to swim away. We were enabled to do this by filling a very large churn with the water of Rockonkoma pond, and putting so few fishes into it that there was no necessity of changing it on the road, and afterwards driving steadily on a walk the whole distance, without stopping to refresh either man or horse. In two years these fishes multiplied so fast, and became so numerous, that they might be caught with the hook in any part of the water, which is about a mile in circumference."

CREDIBILITY OF THE AGRICULTURAL PRESS.

From the Southern Cultivator.

It is in part the vocation of an agricultural press, to herald to a laboring and confiding class of honest citizens, all the improvements in the great art with which they are connected, as fast as they appear. The motives of agricultural editors, therefore, in commending to the patronage of their readers improved animals, implements of agriculture, &c., which *cost them money*, ought, like Cæsar's wife, not only to be beyond reproach, but *above suspicion*.—Hazardous indeed might it be to the fair credit of their commendations, were they ever to cause it to be conjectured, that their *own possession* of such animals or implements, and an overweening anxiety to exchange them for the "thirty pieces of silver" in their neighbors' pockets could cause them to bestow encomiums where they are not merited. Hence, it is exceedingly questionable to our mind, whether, in these degenerate days of imaginary double-dealing and real loss of confidence, it would not be better for honest agricultural editors to *keep nothing for sale* upon which it is often their province to pass hyperbolical panegyrics.

For example, should any one of our honest cotemporaries happen to assure his readers that the only true Berkshire hogs are *black*, with white feet, and a few white hairs on the tip "of the tail" —and should it subsequently appear to the satisfaction of his readers that the same honest editor had previously provided himself with Berkshires (so called) and thus "true in color," which he expected to *sell for high prices*, might it not by possibility cause some few shrewd *old* farmers to suspect they saw "a cat in that meal?" Or should any one of our honest contemporaries, in good faith, advise his readers that there are no genuine Durhams which are *red*, or that have any "black hairs" about their faces, and should it subsequently be found that the said honest contemporary had a herd of his own, no one of which would be rejected under such advice, might it not cause others again to suspect "a wheel within a wheel?"

We have much of the "milk of human kindness" within us, and "without money and without price" we make a free offering of these hints, for the general benefit of the "craft." For, upon the broad shoulders of the *craft*, the "periodical press of agriculture" is to be sustained; upon the periodical press, the facts, the science, and the real improvements of the age are to be impressed; and upon the dissemination of these, is the rapid advancement of the great interests of agriculture to depend for promotion. Now, when it is recollected that all this fine superstructure rests upon a no less solid foundation than the generous *confidence of the farmer* in the credibility of the "craft," it is plain that were this honest *confidence* once rudely annihilated, the periodical press must eventually crumble with it, and in *its* wreck, an end would at once come to that healthful dissemination of facts, practical and scientific, and to that blessed transmission of substantial improvements which causes the highways of agriculture from the old to the new world to "blossom like a rose." Therefore, and we would impress it with respectful fervor, it surely becomes every honest conductor of the agricultural press to place himself upon the watch tower of a sober discretion, and with a telescope of no false lens, look around and about him, to see that not a shadow of a shade of doubt rests upon his strong fortress of disinterested truth. In plainer words, he should be vigilant at all times, and in all manner of forms, to *refrain from all speculation* to the amount of the value of a *picayune* in any of those choice or rare goods of agricultural economy, which it is his vocation to commend to the manifold uses and ends of the confiding tiller of the soil.

These things are said in due deference to the opinions and practices of others—in a spirit of good will to all, and of deep devotion to the true and permanent interests of our country's agriculture.

DOMESTIC CONVENIENCES—CISTERNS.

From the New Genesee Farmer.

Every farmer should give particular attention to convenience of his household department. Female labor may be lessened to a surprising degree by studying this part of domestic economy. To contribute our mite, we here briefly give an account of the construction of a rain-water cistern of our own.

The pit for the cistern was dug so that the outside of the cellar wall formed a part of one side. The wall was built of cobble stone in common lime mortar, one foot in thickness. The bottom, which was hard pan, was first covered with cobble stones, of uniform size, laid in water-lime mortar; a coat of the same mortar was laid upon this; and a second coat of smaller stones completed the bottom. The whole inside then received two coats of water-lime mortar. By applying these to the walls before they had become dry, and then drying very gradually, they were wholly free from cracks. After remaining a few weeks, protected by boards from the sun,—the upper edge of the wall was covered with a layer of water-lime mortar; two inch white oak planks covering the whole, (except a small curb, for the entrance of water and cleaning the cistern,) was laid on this mortar; a coat of water-lime mortar was then spread upon the plank; thick white oak slabs were laid again on this coat of mortar; another coat of mortar upon the slabs, and several inches of compact earth, forming with the planks and slabs, a little more than a foot in thickness, completed the covering. This is sufficient to prevent the water from freezing in the coldest weather, though the curb, (18 in. by 2 ft.) is left open. It also prevents all access of surface water.

The cistern adjoins the kitchen, and a lead pipe, one inch in diameter, passes from near the bottom, through the cellar wall, obliquely upwards, to the

kitchen floor, where it is attached to the lower end of a small pump. Thus, plenty of rain water is at all times at perfect command. The cistern is between 6 and 7 feet in diameter, about five feet deep, and holds about 40 barrels. Care should be taken to procure *good* water lime, failure often arising from bad material.—

BONE DUST FOR THE CULTIVATION OF GRAIN.

From the Repertory of Inventions.

The exportation of bones from Germany to England constitutes a singular epoch in the annals of commerce. Myriads of tons have been already exported without glutting the market, or causing a cessation of the demand. In the North Sea, mills have been erected to pulverize them. This bone powder or bone dust was long ago exclusively applied to the purposes of hot houses by German horticulturists; but the English, emboldened by their riches, have extended its use to general objects of agriculture, and fertilize, by these expensive means, their cold, humid, and poorest land; and have thus brought the uplands of Nottinghamshire, the western parts of Holderness, &c., into the highest state of cultivation, both in point of extent and intenseness of fertility. There is consequently, a proverb "that one ton of German bone dust saves the importation of ten tons of German corn." As Malta formerly covered her naked rocks with foreign soil, so does England now fertilize her clay and sandy heaths with German bones. Near the sea coast even the churchyards are robbed of their venerable relics, which is only ironically excused by rendering the German bone trade popular. An agriculturist, being rendered attentive by this vast exportation, instituted privately some comparative experiments, the results of which prove that bone dust acts in the cultivation of ground, as compared to the best stable manure, 1. In respect of the quality of corn, as seven to five. 2. In respect to quantity, as five to four. 3. In respect to the durability of the energy of soils, as three to two. It produces several collateral advantages: 1. It destroys weeds. 2. It diminishes the necessity of suffering the land to lie fallow. 3. This concentrated manure, or substitute for manure, is more easy of conveyance, less laborious to spread, and can with facility be applied to the steepest vineyards or other inaccessible lands, either mountainous countries or wet meadow land. 4. It renders agriculture practicable without cattle breeding, grazing, &c.

THE STATE AGRICULTURAL SOCIETY.

From the Carolina Planter.

Now that the all absorbing interest of our elections is over, and the excitement diminishing, will our friends think a little of our Agricultural Society.

Last winter we made a favorable commencement—the large delegation of planters and farmers to the convention seemed to promise better things for agriculture. The renewed attempt to establish a general society, to enlist the influence of gentlemen throughout our whole state, is worthy of our most strenuous exertions to advance. Our people are so much in the habit of commencing every important matter on a grand scale, and then giving way, that it becomes us to look well to this matter, and impress upon our members the necessity of a continuance of their efforts.

In the fluctuating condition of the value of our staple products for several years—in the general adversity which prevails throughout our whole country—with our commerce embarrassed—our finance deranged—our crops short, and a necessity for rigid domestic economy, our policy certainly is to give greater attention to our produce which is consumable amongst us. With the extremely low price of our staples, we still have to furnish the same amount of meat, clothing, medical attendance, &c. to our negroes—our children's education has to be paid for, and the ordinary expenses of living have to be met—our taxes to the state are not reduced, and the calls of charity are increased, and what more valuable means can be adopted to aid us in our broken fortunes, than with unanimity and earnestness to put our shoulders to the wheel of *domestic* agriculture, and improve our condition at home. If we cannot produce as much saleable material as we desire to bring us in money, we can save a great portion of our expences by attending a little more to our immediate necessities.

Although many of our planters who have good lands; large forces of negroes, and are free from debt, can afford to make cotton at the low prices which have lately existed, still there is a numerous class who cannot compete with them, or with the planters of the fertile west. It is the interest of all this class to look more now to farming than to planting—to improving their lands, dividing their staples and giving their energies to the culture of the necessaries of life. This class of planters, whose lands are worn, have either to dispose of their lands and negroes, or remove to other and more productive soils, or to be satisfied to use such means as are within their power to renew the capacity of their lands. It is becoming every year a question of importance whether our lands can compete with the west in producing cotton—and when the immense extent of country is considered which is yet to be brought into cultivation; and the necessity for laborers to work that soil, it is doubtful whether we can produce cotton at the prices which the steadily increasing products will necessarily induce.

The number of negroes in the southern states is limited—the lands extensive: in the south western states it is a well known fact that the increase is comparatively trifling—not at all to be compared with that in the southern and middle states. The tendency of the demand for slaves is towards the new lands of the south-west, and a continuance in the depressed price of our staples, will necessarily lead our planters to send them where the product is such as will enable profits to be made if that staple is alone to be depended upon.

When the present embarrassment of the country shall be relieved, and the difficulties of the south-western planters removed, there not being enough negroes in the country to cultivate one half of the western lands, their value will be enhanced. The loss from the climate and the small increase of that class of laborers in the west and south-west, will cause a constant demand for

them which will take them from our planters who are still planting worn out plantations in our state. It is said that in Virginia at this time there are but few to be had, and even with the present prices traders are taking them off to New Orleans.

The time is not distant when many of our planters of poor and exhausted soils will not be able to keep negroes at a price that western lands will fix upon them.

It becomes us all therefore to look to our main chance—the improvement of our agriculture—to give more of our attention and thoughts to our soils, to be able to keep what we have, and make our own means profitable. If men will consider the condition of the agriculture of the old countries, and look at the immense products of their staples compared with ours, and see the constant and persevering efforts of their agriculturists, it must certainly impress them with a belief that we can do something if we try.

The efforts making by the East India Company to improve the culture of cotton in the East Indies is worthy of our notice, although the probability is that our country can produce it always at as low a price as any other—still trammels may exist in the form of imposts that may prevent our competition with them at a future time. However under all circumstances it is our duty to exert ourselves in our own cause. We need an improved agriculture, and, with a proper effort we will have it.

THE TREATMENT OF SICK ANIMALS.

From the Farmer's Cabinet.

There are so many erroneous notions prevalent in the community respecting injured or diseased domestic animals, and such unnatural and injurious practices as a consequence of these incorrect views, that no apology is necessary for an attempt to subserve the cause and interests or these useful creatures, who, if they had tongues to speak, would tell sad tales of the wrongs to which they have been, and still are, too often subjected.

We do not propose to give an essay on the particular cases that require attention—our object is rather very briefly to ask the owners of domestic animals to be guided by a few correct principles, which are applicable to nearly all cases, and which will at least prevent our doing harm where we are not able to effect much good.

In the first place, then, we would insist, that when an animal is well he never requires any medicine—and when he is sick, we would protest against his being dosed with articles that are said to be good for a particular disease, without any reference to its violence or the symptoms, as common sense would dictate; that remedies the most opposite in their character and effects may be equally advantageous in different periods of a case.

Always distrust the man and the remedy, when your friend declares that an article is always '*good*' or a '*certain cure*' for a disease, without reference to its symptoms—prescribing for the name of the disease, rather than the disease itself; this is the very essence of quackery, in man or beast.

A large proportion of the diseases of animals closely resemble those of the human family, require a treatment conducted upon the same general principles—with some variations and some pecularities, it is true, but none of those outrageous departures from common sense which are too frequently witnessed.

A horse with pleurisy, or inflammation of the lungs, or apoplexy, requires a widely different treatment from one with colic or with worms. There is no more mystery about the diseases of a horse or an ox than about those of a man, and a violation of natural laws is as productive of pain and injury in one as the other.

There is, too, a great propensity every where to resort to active treatment in all cases—a feeling that is encouraged by the ignorant or designing for selfish purposes. An adviser in sickness is often most useful and shows most skill where he only tells what is to be avoided and waits for indications for more active measures—doing little more than preventing ignorant but well-meaning persons from interfering with salutary changes that may be going on.

Remember that there is a restorative power in nature, to which it is always better to trust, than to direct active remedies without knowing for what particular purpose they are given.

There is never occasion for the administration of the disgusting combinations which the poor animal is made to swallow, from the whim of an ignorant horse or cow doctor. Many a fine beast has been lost by his owner trusting to such prescriptions.

When your animal has fever, nature would dictate that all stimulating articles of diet or medicine should be avoided. Bleeding may be necessary to reduce the force of the circulation—purging to remove irritating substances from the bowels—moist, light and easily digested food, that his weakened digestion may not be oppressed—cool drinks, to allay thirst, and to some extent, compensate for diminished secretions—rest and quiet, to prevent undue excitement in his system, and so on through the whole catalogue of diseases—but nothing to be done without reason. Carry out this principle and you will probably do much good—hardly great harm;—go on any other, and your measures are more likely to be productive of injury than benefit. But, as we have before said, our object now is not to speak of diseases in detail—it is rather to encourage our agricultural friends to *think* before they *act*—to have a reason that will bear examination for every step in the management of a sick or injured animal—to remember they have a powerful assistant in nature, if she is fairly used—and that specifics, as they are called, are much fewer and less to be trusted than their proprietors would have us believe. We might, indeed, almost sum up what we would desire in one general direction of five words—TREAT YOUR BRUTES LIKE MEN.

RECEIPT FOR MAKING CIDER, AND PRESERVING IT SOUND FOR YEARS.

From the Raleigh Star of 1819.

Three months ago, I was at the house of Nicholas Nall, Esq., who lives near deep river, at the upper extremity of Moore county, where I drank

old cider of a very superior quality; and as the habitual use of cider is eminently conducive to health, insures sobriety, imparts the agreeable sensation of strength and vigor, and as it is a pleasant beverage that can be afforded at a small expense, I took care to be exactly informed of his manner of making, refining, and preserving it, in the hope that advantage might accrue in the publication of it. Mr. Nall had in his cellar, as well as I now remember, about 8 or 10 hogsheads, and fifty or sixty barrels, of cider, of different ages. The oldest was best; nor did he think any fit to drink until it was at least a year old. That which I drank was three years old, and it was excellent. His oldest cider I did not taste, as he intends it as a treat for his executors. He complained that his stock was too small to drink it of the age he wished, but intended to fill another cellar. I here copy Mr. Nall's receipt, as he gave it to me in writing in April last:—

"All apples fit to be eaten will make good cider. The grand secret is the cleansing it from the filth and dregs as early as possible. Each sort of apples are to be beaten and pressed by themselves. Two kinds of juice, both good, would, if mixed, often make bad cider. Throw out all imperfect, sorry, and sunburnt apples, as well as dust and trash. Beat your apples before much mellowed, as they lose their strength, soundness, and spirit, if too mellow. Let them stand half a day after being beaten, before put into the press, then press them slowly. Discontinue it as soon as the juice appears thin and watery. The advantage of slow pressure is in making the liquor run pure. Let your casks, previously well cleansed, be filled quite full, to permit the froth and pumace to discharge itself at the bung, when the fermentation abates, cover the bung closely with something that may be lifted by the fixed air that escapes during the future fermentation. In a week, rack off the cider carefully, ceasing the moment you observe it to run muddy. Now stop the cask more firmly. In ten days, rack it off a second time, and in fifteen days, a third time. In every instance, the casks are to be clean and perfectly well filled; and when filled for the last time, to be bunged close in a deep, dry cellar, never to be moved until drawn for use. Late cider need not be racked until March, and then one racking, or at most two, will be sufficient. Be very careful that no water, not even the little that will adhere after rinsing a cask, is mixed with the cider. The smallest quantity of rain water will render cider unfit to keep. The addition of any quantity of distilled spirits is not only useless but injurious."

Mr. Nall's method is the result of long experience, and its success justifies me in recommending it to the public. I hope it will be tried.

CALVIN JONES.

Raleigh, July 25, 1819.

REMARKS UPON THE FAILURES IN SILK-CULTURE OF THIS SEASON, AND ON THE THEORY OF G. B. SMITH.

To the Editor of the Farmers' Register.

Oct. 17*th*, 1840.

The editorial remarks in your August number, on the disastrous results attending the late rearings of silk-worms during the past season, have attracted my attention. While the facts of the case are fairly and impartially stated, and while it must be admitted on all sides, that the cultivators of the silk-worm have been for the most part grievously disappointed, in their confident expectations of success, yet I consider it too soon to think of abandoning the enterprise. It would be counting too largely in a new and untried business, commenced under many disadvantages, and especially under the disadvantage of ignorance and inexperience, to suppose that entire or even general success was at first attainable. There may be, and no doubt is, a remedy for the evils which have befallen us. That remedy we should diligently strive to discover, instead of fainting by the way-side; and if each cultivator would contribute his mite of experience for the good of the whole, an amount of information might be acquired, sufficient to enlighten our path and direct our footsteps in the further prosecution of this important culture.

But amid so many disappointments, have we not in reality achieved a great deal? Has it not been proved that the silk-worm may be raised with eminent success early in the season, frequently as late as the first of July, and in some instances as late as August, and even September? All accounts represent the early rearings of the past season as highly satisfactory; even good results were in many cases attained in disregard of some of the first rules of good management. The adaptation of our climate to the prosperity of the silk-worm, at least until the first or middle of June, has been established beyond a doubt. To that extent therefore, it has been shown that our advantages for the prosecution of silk culture are at least equal to those of the old silk-growing countries of Europe. But we have not been content—nor is it to be expected that we should remain content—with the simple possession of these advantages. We have looked forward to the practicability of rearing successive crops from April to October; thus multiplying to the extent of five or ten fold the advantages of other countries. Unless something approaching to this can be accomplished, it must be conceded that the introduction of silk culture into this country will not become general. Whether the disastrous effects of the past season have been sufficient to destroy all reliance on successive crops, and to prove it to be the delusion of sanguine and enthusiastic minds, is the question which is to be candidly considered.

Various causes may have contributed to produce those effects, which further experience may enable us to obviate, either wholly or in part. You have stated several of those causes with your accustomed impartiality. The wetness of the season, the reliance on eggs produced by a diseased stock, the unfitness of buildings, (for there are comparatively few regular cocooneries,) the succulent, watery quality of the food, and the bad management of cultivators, most of whom were totally inexperienced, were sufficient causes to prevent uniform success. Indeed, distinguished or general success under such an adverse state of things, might rather have been regarded as wonderful, than that failure should be considered discouraging and disheartening. To the causes already assigned, I will add another, which I be-

lieve to be still more potent, namely, the very inefficient manner in which the eggs of the silk-worm were preserved and retarded for late rearings, thereby rendering worthless a stock originally good. It is obvious that the process of retarding should be commenced early in the winter, before the accession of warm or moderate weather has had any influence on the condition of the embryo. The object is to prolong the winter through which the eggs have to pass previous to hatching; in other words, to continue them in precisely the same state in which they exist at the beginning of cold weather. If they are suffered to be exposed for a few weeks, or even a few days, to mild weather, such as almost uniformly occurs in February, some degree of change must necessarily take place in the condition of the eggs; and if their progress towards the hatching state be suddenly arrested, the effect must inevitably be injurious. They should also be preserved in an equable temperature, as nearly at 40 degrees as possible. The fluctuations of temperature are greater even in an ice-house, at the surface of the ice, than one might suppose without having verified it by an instrument. The atmosphere of a box, resting immediately *on* the ice, will vary according to the state of the weather from 45 to 55 degrees. Imbedded *in* the ice, it will range from 37 to 45 degrees. But it is not alone by subjecting silk-worms' eggs to a low temperature, that they will be preserved uncorrupted. If the air be foul, either from decaying wood or other vegetable matter, or from a want of circulation, the good quality of the eggs will suffer deterioration. It is therefore necessary that some substance be used to correct the gaseous impurities that may be generated; and the simplest and most efficacious agent for this purpose is charcoal. A quantity of it well pulverized, should be placed in the boxes or vessels containing the eggs. In addition to all this, the eggs must be kept dry. When taken out for hatching, they should be gradually exposed to the external air; and the contents of the box should seldom or never be subjected to the influence of the warm air, even for a moment, until they are taken out to be hatched.

I respectfully submit whether these conditions for preserving and protracting the hatching of eggs are not rational? And if they are, what a fruitful source of disease and disaster has arisen from disregarding them. They have probably not been complied with in one case out of ten. I feel warranted therefore in repeating that the neglect or omission to take proper care of the eggs, is perhaps one of the most potent causes of the evils to which the silk culturist has been subjected.

But notwithstanding every precaution in preserving the eggs, it is still very possible, not to say probable, that the hatching may be protracted so far beyond the natural time as to render them unfit for the production of a healthy progeny. No process of retarding has been devised by which the tendency to hatch has been entirely arrested or suspended. Some advancement towards the hatching condition, however gradual, will be made even at the lowest temperature to which eggs can be conveniently subjected, when they are kept much beyond the natural period for them to hatch. There is great reason to believe that a want of due attention to this fact may be added to the other causes of failure; and that before perfect success in the rearing of successive crops can be attained —if attainable at all—the cultivators of the silk-worm must provide themselves with a stock of eggs saved at successive periods during the season. This view of the subject has been strongly presented by Gideon B. Smith, who has founded upon it what may be termed a new theory, which he has recently promulgated and endeavored to establish. The basis of his theory is the fact that the eggs of the silk-worm *naturally* hatch at the expiration of one year from the hatching of the preceding generation; and the deduction is that the farther the hatching is removed by artificial means beyond the natural time, the more liable is the progeny to degeneracy and disease. To what extent the hatching may be safely postponed, cannot at present be determined with precision. Mr. Smith adduces facts to show that it may be extended one month beyond the natural time, without impairing the good quality of the eggs; and by exercising judicious care in the preservation of the eggs, the period may be still further postponed.

Since the publication of this theory, I have endeavored to test its claims to acceptance by reviewing the facts which have come under my observation during the two past seasons; and I feel bound to state that it offers a solution for many difficulties which were before inexplicable to my apprehension. It is, moreover, a *rational* theory, and in harmony with the laws of nature. It commends itself therefore to the serious attention of those who intend to persevere in silk culture in spite of the disasters of the present year—disasters which it may be reasonably hoped are only temporary, and capable of being obviated by the use of such precautions as the subject merits and requires. Further experience may lead to some modification of the details without invalidating the principle.

You have contrasted the results of the past and present years in rearing silk-worms, but have not attempted to account for the difference. May not Mr. Smith's theory explain the mystery most satisfactorily? In the year 1839 all our late rearings were from northern eggs. The season was not less wet and unfavorable in every respect than that of 1840. Now it is well known that during the continuance of the multicaulis mania, the experimenters with silk-worms could not obtain foliage earlier than June or July. The sole reliance was on the leaves of young trees raised from buds planted the preceding spring, and from roots transplanted. All the eggs therefore which were received from the north must have been derived from worms hatched not earlier than the fore part of June--in many cases from even later broods. Such eggs, if of good quality, should, according to Mr. Smith's system, have produced healthy worms if hatched within thirteen months from the hatching of the parent generation. The late rearings in Virginia last year were attended with results which gave general satisfaction and encouragement. It is but fair therefore to presume that those results were modified by the principle on which Mr. Smith's theory is founded. And in all instances where I have been able to learn the facts and dates, the late rearings of this year, derived from the late rearings of last year, have been attended with much better success than those derived from spring-laid eggs, long retarded. But in the general ignorance of the principle adverted

to, there was no regularity observed in hatching eggs, according to their dates. On the contrary, the early saved eggs, being generally considered the best, were reserved for summer use; and the summer laid eggs were hatched before the natural time. To this cause, as well as to the imperfect manner in which the eggs were generally preserved, may be reasonably ascribed much of the failure and disaster of the present year.

It has been objected on high authority to the theory of Mr. Smith, that if it be true, its effect will be to prostrate the silk business entirely. But why should it produce this effect? All the inconvenience that can possibly ensue, even if the principle was fully admitted and acted upon, would be the trouble of saving the eggs at several times instead of at one time. How it can be fatal, or even detrimental to the interests of silk culture, it is difficult to conceive. If there be any *facts* going to invalidate it, let them be adduced. No theory can stand in opposition to them.

It becomes the friends of silk culture to prosecute their labors next year with increased caution and attention. After the experience of this year, it will perhaps be advisable to attempt full crops of silk-worms in the early part of the season. There can be no doubt that with tolerable care, all the spring broods will be healthy, and the results successful. Late rearings, however, should not be neglected. It is exceedingly desirable to ascertain how far the character of the past season has been unfavorable to the welfare of the silk-worm; to what extent eggs preserved in the best manner may be safely retarded; and how far further experience may confirm or overthrow the system of Mr. Smith. In the course of another year, or a year or two at most, we may acquire the true art of raising successive crops with certainty and success—a consummation which doubtless is attainable; and which, if attainable, the sagacity and perseverance of our countrymen cannot fail to realize.

A FRIEND TO SILK CULTURE.

COWS HOLDING UP THEIR MILK.

From the New England Farmer.

Mr. Editor—Sir: I am not in the habit of writing for any publication, but as I have just commenced farming with my father, who is one of the best managers of the old school, I feel very much interested in whatever I see or hear relative to the management of a farm. I thought I might be of use to some one by giving my father's mode of treating a cow that holds up her milk on taking away the calf, or at any other time. In the first place he ascertains what kind of food the cow likes best; whether it be meal, oats or potatoes:--he takes the food and coaxes her to one corner of the yard or into the stable; gives it, and begins to milk:--if the cow refuses to give her milk, he tries the same the second time, and has always succeeded to get the milk as freely as from any other cow unless the food was neglected, or contained something which she did not like. My father bought a young cow last winter: she had her calf quite early in the spring: on taking away the calf the held her milk, giving it down only once in two or three days: he tried several experiments, (not liking the trouble of feeding,) till the cow was nearly dry: finding none of them effectual, he began to feed, and never has been troubled since. The cow says, no supper no milk. This is the fourth or fifth cow of this description he has had, and has always succeeded in getting the milk as freely as from any other cow. J. C.

SIBERIAN DOGS.

From the Foreign Quarterly Review.

The best friend of man in almost every clime is the dog, but in Northern Siberia existence would scarcely be possible without the aid of this invaluable animal. All along the Arctic Ocean the dog is almost the only beast of burden. He is harnessed to the light sledge, or *narte*, which will carry no inconsiderable load, and in which, during winter, the natives perform journeys of incredible length. The Siberian dog bears a strong resemblance to the wolf. He has a long pointed snout, sharp upright ears, and a long bushy tail. Some of them have short hair, others a tolerably thick fur, and they are met with of all imaginable colors. Their size also differs very much, but a dog is not thought fit for the sledge if less than one arshin and two wershok high, and one arshin and five wershok long.* Their barking resembles the howling of a wolf. They always remain in the open air. In summer they dig holes in the frozen earth to cool themselves, and sometimes they will spend the whole day in the water to escape from the persecution of the gnats. Against the intense cold of winter they seek shelter by burying themselves under the snow, where they lie rolled up with the snout covered by the bushy tail. Of the cubs, the males only are usually kept, the females are mostly drowned, only one or two being entertained by each father of a family to preserve the breed. The rearing of these dogs forms an important occupation, and requires no little skill and judgment. A dog may be put to the sledge when a year old, but cannot be subjected to hard work before his third winter. The team of a sledge seldom consists of less than twelve of these dogs, of whom one is used as leader, upon whose breeding and docility the safety of the whole party depends. No dog must be used as a leader unless he be perfectly obedient to the voice of his master, nor unless the latter be certain that the animal will not be diverted one moment from his course by the scent of any kind of game. This last point is one of the highest importance, and if the dog has not been well broken in, but turns to the right or left, the rest of the dogs will immediately join in the pursuit, when the sledge is of course overturned, and the whole pack continue the chase until some natural obstacle intervene to arrest their course. A well taught leader, on the other hand, not only will not allow himself to be seduced from his duty, but will often display the most astonishing tact in preventing the rest of the team from yielding to their natural instinct. On the boundless tundra, during a dark night, while the surrounding atmosphere is obscured by the falling snow, it is to the intelligence of his leading dog that the traveller is constantly indebted for his preservation. If the animal has once been the

* Three Russian arshins make seven English feet, and each arshin is divided into sixteen wershok.

same road before, he never fails to discover the customary halting-place, though the hut may have been completely buried under the drifting snow. Suddenly the dog will remain motionless upon the trackless and unbroken surface, and by the friendly wagging of his tail announce to his master that he need only fall to work with his snow-shovel to find the door of the hut that offers him a warm lodging for the night. The snow-shovel on these winter excursions appears to be an appendage without which no traveller ventures upon a journey.

In summer the dog is no less serviceable than in winter. As in the one season he is yoked to the sledge, so in the other he is employed to draw the canoe up against the stream, and here they display their sagacity in an equally surprising manner. At a word they halt, or where an opposing rock bars their progress on the one side, they will plunge into the water, swim across the river, and resume their course along the opposite bank. In short, the dog is as indispensable to the Siberian settler, as the tame reindeer to the Laplander. The mutual attachment between the Siberian and his dog is in proportion to their mutual dependence on each other. M. von Wrangel relates remarkable instances of the extent to which he has seen some of the people carry their fondness for their dogs. In 1821 an epidemic disease broke out among the dogs in Siberia, and carried off many thousands of them. [He says] "A Yukaheer family had lost the whole of the twenty dogs of which they had recently been possessed, and two newly-born cubs were all that remained. As these animals were still blind, and without a mother's care, it scarcely appeared possible to preserve them. The Yukaheer's wife, to save the last remnant of the wealth of her house, resolved that the two dogs should share the milk of her breast with her own child. She was rewarded. The two adopted sucklings throve wonderfully, and became the ancestors of a new and vigorous race of dogs."

The sufferings of the poor inhabitants, in consequence of the loss of the dogs, through the epidemic malady that raged in 1821 and 1822, were dreadful in the extreme. Yet will it be believed, that an order was once actually issued by the government at St. Petersburg, to destroy all the dogs throughout the north of Siberia, "on account of their consuming such quantities of provisions, and thereby occasioning such frequent famines." The order was not executed, because it would have required the whole Russian army to enforce the command, and after a while means were found to enlighten the rulers upon the absurd tyranny of their proposed "reform."

CULTIVATION OF DACTYLIS GLOMERATA, OR ORCHARD GRASS.

From the New Genesee Farmer.

Messrs. Editors.—Gentlemen—In answer to the inquiries of Sereneus, in his interrogatories through the medium of your journal, I beg leave to remark that I have been in the habit of cultivating the orchard grass, both for seed and hay, for the last 25 years, and am of the full conviction that it stands as high for hay or feed as any other. As to the soil best adapted to its growth, I conceive that moist rich loam is the best; but I have found that when I have sown it among other grasses for pasture, it grows luxuriantly; and in cases of severe drought, when all other grasses are apparently dead, this stands the best, being all the time green and fresh. The best time for sowing the seed, I conceive to be about the middle of July or first of August, as probably nature directs this the best time for sowing, when seed comes to maturity, which is about that time, or earlier—to be dragged in on mellow land,—yet I have always stocked in the spring with oats, at the rate of a bushel to the acre, and if the oats are not too heavy it generally grows well. Its value for hay, I think, stands as high as any other grass, and for feed and the second crop it stands pre-eminent, as it comes forward earlier in the spring and holds out longer in the fall. On my farm in Connecticut, from whence I removed this spring, I usually cut from two and a half to three tons per acre, exclusive of the seed which I reaped before mowing in the same manner as I would wheat, and generally secured from 15 to 20 bushels of seed to the acre. The second crop yields from one and a half to two tons per acre.

I know not how this grass will grow in this country, but I doubt not that the soil here is admirably adapted to its growth, as the land is rich, and in my opinion will grow well almost every kind of grass that the farmer may wish to cultivate. I brought with me a small lot of seed, and stocked last spring with oats about an acre of land; and the result is I have a fine piece of orchard grass, which is coming forward to my entire satisfaction. I intend to save seed enough next year to stock more, and furnish my neighbors some should they wish. In conclusion, I would advise "Sereneus" to try this kind of grass, and presume he will find it for his interest to grow it for both pasture and hay. ZECHARIAH CONE.

Batavia, September, 1840.

ON RAISING AND CLEANING CLOVER SEED—CLOVER MACHINES.

From the New Genesee Farmer.

Messrs. Editors—In your last paper you acknowledged the receipt of my communication on the subject of thrashing and cleaning clover seed; and you also required more minute detai's on the subject. I willingly give you my experience and observation. I will treat the subject systematically, and take each query proposed by you in order.

1st. *As to the kind of soil.*—As far as I have been able to judge, a *sandy*, or *loamy*, or in fact, any *light* soil is best adapted. It seldom does well on *clay* soils.

2d. *As to the time and frequency of sowing*—We generally sow in the first opening of spring, while the ground is moist and open; in order to give the seed a chance to penetrate a little into the ground. There are many farmers who sow as early as the beginning of March; and some sow when there is a little snow on the ground, to enable them (they say) to sow more accurately. Clover intended for seed, ought never to lay more than two years, because, after this, much of it will

run out, and make room for various kinds of grass and noxious weeds.

3d. *As to the time of cutting.*—On this point I entirely coincide with your valuable correspondent, Mr. Harmon, that the seed should be perfectly ripe. 1st, because it will yield more seed per acre when sold by weight; and 2d, because it will thrash at least one third easier.

4th. *Is the first or second crop best?*—Experience teaches us that the second crop will yield generally about one third more; the reason we suppose to be, that the first crop, ripening in the heat of summer, ripens too speedily, and consequently the seed is very much shrunk, and of course a very bad sample.

5th. *Amount of seed obtained from an acre.*—We generally expect, on suitable soil, from two to four bushels; but this depends much on the season; a wet season being by far the most productive. We seldom cut more than a bushel per acre on stiff clay soils.

6th. *Whether the thrashing cannot be done by a thrashing machine instead of a flail?* I have seen this tried several times. 1st, with a spiked machine. We found that it took as long to separate the heads from the straw—the latter being mostly broken up—as it did to thrash it with a flail; and also, that after doing the best we could with it, there remained nearly double the bulk of chaff, and broken straw mixed, to be thrashed with the clover machine, allowing for the services of the machine two extra men and four horses. It was next tried with what we call a better machine. We found this the best in one point; the straw was somewhat broken up; but, as an offset againt this, we found it impossible to make it thrash clean.—We therefore concluded that the flail was by far the best.

7th. *What is the cost of a clover machine with and without the horse power?*—To this I must observe that I have seen the kind mentioned by your friend Harmon, and those made by Mr. Burrall of Geneva; but I consider the kind briefly mentioned by me in your last paper, not only the most convenient for a stationary machine, but likewise the cheapest: a friend of mine having made several of them (without horse power) for $40, materials inclusive.

8th. *Can the clover machine be easily adapted to the different horse powers used in thrashing wheat; and what amount of power is required?*—This query may be speedily answered by the fact that I never knew a farmer who had a separate horse power for his clover machine. The generality of clover machines can be worked with three horses, but four are best.

There is another point which you forgot, and I had nearly forgotten to mention. It is the quantity of seed necessary to sow an acre. We usually sow a bushel on six acres, but some farmers consider a bushel to ten acres to be sufficient.

Remarks.—The plan usually pursued in this country for raising clover is this: We seed our wheat at the time above mentioned. After harvest we are careful that nothing feeds on this clover for the remainder of the season, for it injures the young clover very much. The next season we cut a crop of hay, say about the middle of July; then sow on about two bushels of plaster, and let it grow for seed. We repeat this the second season, and the ensuing spring we plough up for fallow.

Yours, &c.,

W. N. H.

Yates Co., Sept. 1840.

OF THE COURSES OF CROPS.

From Arthur Young's Travels.

PIEDMONT.—*Chentale.*—A year of fallow common in five or six years, during which year the land is never watered, only exposed to the sun. Wheat is sown on fallow; on clover land; always after hemp, because the land is in high order; the same after maize, if well manured; in which case also after millet sown in June, otherwise meslin or rye. The fallow for wheat, commonly follows buckwheat, called here *fromentin*, or millet. Clover is sown among rye in March, never among wheat. Millet de cottura is sown in June; millet de restuba the end of July, after wheat; and then dung well for hemp.

Turin.—In some arable land I viewed, a few miles from this capital, the following most extraordinary course was pursued, and was mentioned to me as being not uncommon; 1 maize; 2, wheat; 3, wheat; 4, wheat; 5, maize; 6, wheat; 7, wheat; 8, wheat.

The year of maize being considered as such a preparation, as to allow of three successive crops of wheat. The practice however is barbarous. Upon the farm of Sig. Briolo, the following is the course;—1, maize; 2, wheat; 3, rye; and when the land wants repose, clover is sown upon a small part.

Vercelli.—Upon good wheat land;—1, maize; 2, wheat; 3, wheat; 4, rye. And in the rice grounds;—1, fallow; 2, rice; 3, rice; 4, rice. They have here an excellent practice, and it extends, more or less, over all Piedmont, which is to mow clover by the 10th of May, and to plough the land and plant maize, which succeeds greatly after clover.

MILANESE—*Milan.*—The arable lands never repose; but a quick succession is reaped. Two crops of bread corn are gained in one year, by sowing maize in July, after wheat.

Milan to Pavia.—The course common in the rice grounds, is,—1, rice; 2, rice; 3, rice; 4, fallow, and dung; 5, wheat, clover sown, either with it in autumn, or upon it in spring; the former best; 6 clover; 7, clover; 8, clover; 9, flax, and then millet the same year: and then rice again, as above.

Also,—1, wheat; 2, clover; 3, clover; 4, clover; 5, clover; 6, flax and then maize; 7, wheat, and clover again. Sometimes after flax, coleseed for oil. Another course,—1, 2, 3, clover; 4, maize; 5, rice; 6, rice; 7, rice; 8, fallow; 9, corn, and clover.

In the Pavese.—1, rye, and then fallowed for, 2, wheat, sown with clover in February, mown with the stubble, and then fed; 3, clover, 4, clover; 5, clover; 6, flax, and then millet; or, instead of both, maize; 7, wheat; 8, wheat, and left, then, sometimes, to pasturage under clover.

Mozzata.—A course common here,—1 clover; 2, winter flax; 3, lupines; 4, maize, for forage; 5, coleseed; 6, cabbages; 7, panic; 8, hemp; 9, beans. This course will be found to occupy about

twelve pertiche in one hundred, and to pass in succession over the whole, for the benefit of variation. Another,—1, wheat, and millet after; 2, common maize; 3, wheat and millet; 4 common maize; 5, rye and quarantino; 6 common maize; 7 rye and quarantino; 8 common maize. The assiduity with which they avoid a fallow deserves attention; and it is here effected, as in the south of France, by means of a plant that is asserted by many to exhaust.

Lodizan.—1, Wheat, sown in October and reaped in June, and the land ploughed thrice, and manured for, 2, wheat again, and clover, called *spianata agostano*, which is fed till the following spring, but sometimes ploughed the end of autumn; 3, flax; 4, millet. Another course, called *coltura maggenga*,—1, break up the layer for flax; 2, millet; 3, maize; 4, wheat, the stubble of which remains in *spianata agostano*.

Cremonese.—1, Wheat sown in October, and reaped in June, the stubble ploughed thrice for, 2, wheat, upon which sow clover the end of February; 3, clover, ploughed in November for, 4, flax, and then millet; 5, maize; 6, wheat.

Carpianese.—1, Maize; 2, wheat sown in the spring with clover, which is mown with the stubble, and remains *spianata agostano*: 3, clover; 4, flax, and then millet; 5, rice; 6, rice; 7, rice.

VENETIAN STATE.—*Bergamo.*—The land here is constantly cropped;—1, wheat; 2, clover, mown in the spring once, in time for maize; 3, wheat; 4, clover. Also,—1, clover or millet; 2, maize; 3, wheat. By which courses they have half or a third of their land in wheat every year.

Brescia.—1, Wheat and 20 lb. of clover-seed in March, per jugero,—the clover cut in August with the wheat-stubble, and then pastured; in winter dunged;—2, clover called this year *prato grasso*, cut thrice; first in May, called *il maggiatico* second in August, called *l'ostano*; third in September, *il navarolo*:—3, in March sow flax, which is gathered in June; then plough and sow quarantino, amongst which, at the second hoeing, sow lupines for manure:—4, plough in the lupines and sow wheat in November, which is reaped in June; cut the stubble immediately, and sow lupines or coleseed for manure:—5, plough in October, and sow wheat mixed with rye; reaped in June, and then sow part with quarentino and part with panic:—6, if a crop of coleseed is taken, it is sown amongst the maize while growing, which cole is ripe in spring, in time to clear the ground for manuring and sowing the common maize; if cole not sown, remains fallow in winter and sow *melica* in spring,—the great millet.

Verona.—Here, as in all other parts of Lombardy, the land is never fallowed;—1, maize, called *grano turco*:—2, wheat, and, when reaped, millet, or *cinquantino*; this is the quarintino of the Milanese:—3, barley or oats, and, when reaped, some other second crop. Wheat is always sown after maize, and that after barley or oats. No clover used here, except in rice-lands. In the rice-grounds,—1, wheat reaped time enough for a crop of cinquantino; 2, maize; 3, clover; 4, rice, &c. &c. Beans are also sown instead of maize, and wheat after them, and prepare for wheat much better. On the dry lands, such as about the Lago di Guarda, &c. no clover, as the land is not good enough.

To Vicenza.—No fallow any where. There is a little clover, and very fine, but the quantity is small: all wheat and maize, and scarcely any thing else.

Vicenza.—Wheat is always sown after clover, and cinquantino after wheat; but nothing prepares so well for that crop as beans, so that they are called the mother of wheat, *madre della formento*. This idea, in Lombardy, is as old as Gallo, who remarks, that wheat succeeds after nothing better than beans, which *in grassano maggiormente la terra, che non fa ogni altro legume**; and this he refers to as a custom of the Cremonese and the Mantuans. It is equally true in England; and such a combination of authority ought to convince such as yet want conviction, of the utility of beans as a preparation for wheat; more, perhaps, to be depended on than any other preparation whatever. A common course near this city, introduced as a variety, is,—1, maize; 2, wheat and cinquantino. A farmer cultivated a field, during some years, in this course,—1, maize; 2, wheat; 3, clover: and to preclude the necessity of dung, he used only the *vanga* (spade): for five years his crops were good, but afterwards declined greatly, till he could not get even clover. They sow wheat in October, and the clover-seed over it in March, if there is rain; the end of June the wheat is cut; the end of August the clover is mown for hay; and another small crop again in October: here is, therefore, within a year, one crop of wheat and two of clover. The grass is cut again in May, or beginning of the following June; a second time in August; and a third growth ploughed in for wheat, which is usually a very great crop in this husbandry.

Padua.—On all sorts of land, the most usual husbandry is,—1, dung for maize; 2, wheat; 3, wheat, and then cinquantino or millet, &c. Clover is sown both in autumn and in spring; if the frost is not very severe, autumn is best, but spring the most secure. It is cut once after the wheat is reaped.

Venice.—Sig. Arduino assures me, there is no fallow to be found in any part of the Venetian territory; they have not even a word to express the idea—*l'anno di riposo*, is a different thing, and always means clover, or a state of rest, without any tillage. That gentleman's expression pleased me much,—*La jachere è una sciocca pratica in agricoltura.* The two great points on which the best agriculture of the Venetian state turns are maize on clover, and wheat on beans. All these plants are equally necessary upon a farm; and there is a peculiarity in clover, as a preparation for maize, and equally in beans, as preparatory for wheat.

Bologna.—In a very rich field near this city, which I viewed, the course has been, in 1787, wheat, which produced 100 corbi, or twenty times the seed. In 1788, hemp 5000 lb. In 1789, it is now wheat, and perfectly clean. This course, of—1, hemp; 2, wheat, is perhaps the most profitable in the world,—and brings to mind the noble vale of the Garonne, under the same management. If land will do for hemp, they never fallow, but have some fields in the course,—1, fallow; 2, wheat, which ought to be considered as a disgrace to Lombardy. 1, Maize; 2, wheat, is

* Le Venti Giornate dell'Agricoltura. Brescia, 1775. 4to p. 59.

a course not uncommon. On the fallowed lands they sow beans, provided they have dung. Very little clover, preferring fenugreek, which is succeeded by wheat. Vetches they sow in autumn, and beans also, both for a crop, and also to plough in, in the spring, as a manure for hemp. With equal quantities of manure, beans give better wheat than hemp. Beans on Sig. Bignami's farm, are now (November) six inches high on the tops of narrow ridges, but none in the furrows; these are for a crop, and infinitely too thick, I should apprehend. Lupines also, for ploughing in.

TUSCANY.—In the Valdarno di Sura, Colini, Sienisi, Fisani, Volterrana, they fallow, and their course is,—1, fallow; 2, wheat. After travelling so long in Lombardy without a fallow, it hurt me to find them common here. Clover is usually made a preparation for maize in most parts of this country; and beans, where sown, are reckoned the best for wheat. At Martelli, &c. the course is,—1, beans, French beans, or maize; 2, wheat; 3, wheat; 4, wheat and rye, and no after-crop. In the Valdichiana, the following course, I am informed, is pursued,—1, maize and French beans; 2, wheat, and nothing after it; 3, wheat and then raves,—and, in some places, clover added. At Villamagna, the course is,—1, *biade*, vetches, beans, &c.; 2. wheat; 3, wheat; 4, wheat. The first wheat produces nine or ten times the seed, if after beans; the second six or seven; the third three or four: —a degradation that ought to explain fully the absurdity of such a system. In some districts the following is the course,—first year, biadi, viz. beans, pease, chick-pease, French beans, tares, lentils, oats, maize, the great millet, small millet, panic in part, clover and oats, and after cutting for forage, plough for some of the above. Second year, upon the land thus prepared, wheat is sown, called *grosso* and *aristata* mucked; or with half *grosso* and half *gentili* (white wheat). Third year, gentili wheat.

MODENA.—The bad farmers in the Modenese are fallowists, and their course is,—1, fallow, ploughed first in May or June, in August the second time, and the third in October, for sowing, 2, wheat. But the better farms substitute beans, French beans, vetches, spelt, maize, particularly the last instead of a fallow. Upon soils that are very good, and manured, they have an execrable custom of taking three crops of wheat in succession; sometimes throwing in clover with the wheat, which is ploughed up in June for wheat again. When beans are sown in autumn, and stand the frost, they yield much more than spring sown.

The husbandry practised by Sig. Bertolini, which is the best of the country, is,—1. beans, sown in October, and harvested in May: then French beans, or formentoni, for forage, or chick-pease, or lentils; 2, wheat, the stubble ploughed thrice for, 3, wheat; 4, maize, sown in March. To Reggio they fallow some of their land every third year; but more commonly substitute maize, beans, or something else in lieu.

PARMA—In the country about Vicomero, the common course is,—1, beans; 2, wheat; 3, maize; 4, wheat.

PIEDMONT.—*Tortonese.*—A common course here, is,—1, beans; 2, wheat. Also,—1, melga, (great millet); 2, wheat. But they have some lands in fallow courses.

SAVOY.—At Lanesbourg, the common husbandry is that of a crop and a fallow: they plough in May or June, and again for the seed in August, when they sow the rye; and they have no wheat.

From these notes it appears, that there is something both to commend and to condemn in these Italian courses. The rejection of fallows is pretty general; this is a good feature, and the great stress they lay on beans, as a preparation for wheat, cannot be praised too much. On the other hand, there seems to be no idea of so proportioning the crops of a farm, as to make cattle and sheep (kept on arable land) the preparation for corn: the culture of clover is not unknown, but scarcely extends further than to produce some hay. I no where met with artificial grasses introduced on so large a scale as to support a good flock of sheep. In some districts, the great plenty of watered meadow explains this deficiency; but there are more where it will not afford an apology. This objection, however, does not hold good in the Lodizan, where their immense dairies are supported on arable land, and certainly form one of the most curious systems of husbandry that are to be met with in Europe.

AN EFFECTUAL MODE OF FRIGHTENING CROWS FROM CORN-FIELDS.

For the Farmers' Register.

During my residence in the western part of Louisiana, which is much infested by black birds and crows, I frequently observed a white cotton thread suspended from the top of one cane (or large reed) to the top of others throughout the length of their corn-fields. I inquired the use of it, and was answered that it scared the crows or black birds, I do not recollect which, but am of opinion it scared both. Since my return to Virginia, I have settled on a small farm in Chesterfield county. Three sides of my field are enclosed by pine woods, the most choice abode of crows. Immediately after planting my corn, I tried the experiment. I procured small pine poles, 15 or 16 feet in length; set them in my corn-field, 50 or 60 yards apart lengthwise the field as it was long and narrow; then stretched the cotton twine from the top of one pole to the top of another, throughout the field; and found that my corn was protected from 40 to 50 yards on each side of the twine so suspended. The next season my field being in form an obtuse angled triangle, and would require a number of threads stretched parallel through the field on account of its form, and by way of saving labor and thread, as well as for experiment, I stretched the thread around the field, or set the poles on the outer edge of the corn-field, say about ten or fifteen yards from the fence, which protected the corn entirely from crows. The present year I enclosed or stretched the thread around thirty acres of corn, say with two pounds of cotton twine, at 31¼ cents per pound, and am well satisfied that I did not lose one hill of corn by crows.

It is my positive belief that if a field of any magnitude was enclosed by the thread (unless a crow on entering the field should fly so high as not to observe the thread,) there never would be

one in it, as long as the thread was suspended. I get small saplings, as small as I can, (so that they may give way to the winds,) about 15 to 16 feet long. First drop them around the field at 50 or 60 yards' distance; then I make holes with a "stab," (or pointed stake,) so as to set the poles firm in the ground. Then I wrap the thread around the end of the first pole and set it up firm; go on to the next with my ball of twine, wrap it around that, and so on throughout; observing to stretch the thread as tight as possible, in the first instance, as it will swag very much after a rain or heavy dews. I give these directions because I believe, from experience, that it is necessary that the thread should swag a little, so as to be kept in motion by every slight breeze. I hope that many will try it. JAMES LYNCH.

REMARKS ON DIFFERENT BREEDS OF HOGS.

To the Editor of the Farmers' Register.

Of all the improved breeds of hogs introduced into this state, the Essex half-black pig, of England, or as it is called here, the Skinner breed, and the Berkshire, are the finest I have seen. The former were, I believe first introduced by means of an English farmer of reputation, who had been present at various cattle shows in this country, and on his return to England in 1825, sent a pair of them, as better than any he had seen here, to John S. Skinner, esq., then as now, editor of the American Farmer, at Baltimore. It does not appear that he gave the name by which they were known in England. But from a drawing of the sow, on page 372 of the 6th volume of the American Farmer compared with drawings of the Essex half-black pig, in Dickson's Farmers' Companion, vol. ii., p. 898, and Mr. Western's sow, p. 286 of the Complete Grazier, edition of 1830, the identity of the two breeds seems to be established beyond a doubt. "The Essex half-black pigs," says the Complete Grazier, p. 286, "are apparently descended from the Berkshire stock, and may be reckoned among the finest breeds in this country, [England.] They are black and white, short-haired, fine skinned, smaller heads and ears than the Berkshire, but the latter are feathered with inside hair, which is a distinctive mark of both; short snubby noses, very fine bone, broad and deep in the belly, full in the hind quarters, but light in the bone and offal. Mr. Western describes them as feeding remarkably quick, growing fast, and of an excellent quality of meat, and he considers them at least equal, upon a fair comparison of age, food and weight, to any sort whatever."

This is an excellent cross upon other breeds, and though the Complete Grazier is high authority, and I feel that it savors of presumption to question its accuracy as to the fact that the Essex half-black is descended from the Berkshire, yet an inexperienced eye, comparing the drawings of the two, in that work, with the Berkshires we have now, would inevitably conclude that the latter are descendants of the former, as they show all their best points, in most of which fine points the Berkshires of 1807 appear to have been deficient.

The Berkshires are certainly very fine hogs, longer and larger than the Essex half-blacks, but they may not do as well under the customary Virginia mode of raising and treating this valuable animal. If they will, they are certainly to be preferred, generally; and as the demand for them appears to be increasing in our state, it is important to us to know which are the true "Simon Pures," especially as differences of opinion exist in New York, whence our supplies are derived.

In the 'Complete Grazier,' p. 285, will be found a drawing of a pair of Berkshires "exhibited at Lord Somerville's cattle show in 1807, when they attracted universal admiration." Now, the Berkshires of the present day (those at least that I have seen) resemble this pair, as *to form*, about as nearly as a mule resembles a horse—the advantage being greatly in favor of the modern stock. In the article which accompanies the plate, it is stated that one of the specific characters of the Berkshires in 1807 was a "reddish color with brown or black spots." In Dickson's 'Farmers' Companion,' vol. ii., p. 897, they are described as "Tawny or reddish color, spotted with black; large ears, hanging over the eyes; thick, close and well made in the body; legs short; small in the bone: disposition to fatten quickly." Low, in his Practical Agriculture, which is probably the latest authority, says, "The Berkshire was the earliest of the improved breeds of England, and is now the most generally diffused of all others. It has been undoubtedly formed by a mixture of the blood of the eastern hog with the ancient swine of the country. The great improver of this breed was Mr. Astley of Oldstonehall. The modern Berkshire, however, is of less size than the older breed; but still the animals are usually of the larger class of swine. Their common color is reddish brown, with dark spots; but many of the modern breed are nearly black, manifesting their near approach to the Siamese character; and sometimes they are black, broken with white, indicating the effects of the cross of the white Chinese. The Berkshires are generally regarded as one of the superior breeds of England, combining good size with aptitude to fatten, and their flesh is fitted for pork or bacon."

This last quoted article seems to settle the amusing controversy in some of the northern prints, as to white toes, white tails, &c., which appear here to be fairly accounted for. I have heard too, that a prevailing color in a parent stock, which has been crossed, will sometimes disappear, and then reappear in the progeny. There is in my possession a white sow, not a Berkshire, with a litter of seven pigs by a Berkshire boar, which is black and white; four of these pigs are perfectly white, the other three spotted-black, white and tawny or reddish.

The Hampshire hog I perceive is recommended by a writer in the 'Cultivator,' whose letter is republished in the August number of the Register. But from the following description from the 'Farmers' Series of the Library of Useful Knowledge,' vol. ii. British Husbandry, page 508, I should think it would not suit us better, if so well, as the Berkshires. "The Hampshire hog, of a white color, has been long celebrated as forming very superior bacon; but its character has been acquired more from its being fed, when young, upon the mast which abounds in the New Forest, and other wood-lands, and the mode of curing it, than from any inherent excellence in the breed of its

native country: being a coarse, raw-boned, flat-sided animal; but fatting kindly. Very few, however, of the genuine native hog are now to be met with, the common stock being either the Berkshire breed, or a considerable predominance of that blood in the native swine of the county; and subsequent crosses with that, as well as with the Suffolk and Chinese breeds, have produced an animal of a hardy nature, prone to get fat at an early age, and always to keep in good condition in a store state."

The best stock, however, will degenerate without proper food and attention—it is said that the hog requires less and gives back more for what it receives, than any other stock. But with us he is too commonly left to shift for himself until large enough to fatten, and yet costs more than he would under better treatment. Keep him in a thriving state from the first, and half the corn will fatten him that a poor starveling would require; and this is easily done without increasing materially the expense of farming. Indeed it is sound economy. It is stated in Deane's 'New England Farmer or Georgical Dictionary' (a most valuable work) that the late Arthur Young pastured 64 hogs, large and small, upon two acres of clover, from May until November. One of the best farmers and breeders I know, keeps his hogs in pens, or at most with the range of his farm yard, and has the green clover cut for them—estimating the manure saved as equivalent to the labor. It is probably the best plan. My own were kept on clover, with the aid of a few cymlins, in fine condition, until they were put up to fatten last year. The sows, and the shoats for this year's pork, were put up at the same time, in a pen to themselves, floored with logs and provided with a dry sleeping place. These were fed through the winter, and until they were turned upon a lot of clover enclosed for that purpose in the spring, upon boiled vegetables entirely—much after the plan of Mr. Ingersol of Brookline, published in the Register, for January, 1839, pp. 31 to 37. They had no corn, but were in fine order all the winter, and are so now. The vegetables used were cymlins first, then beets, carrots, parsnips, from the garden, with some pumpkins, and lastly, ruta baga turnips, which carried them nearly through the month of April, when they were put upon the clover again. The boiled food was given three times a day with but little trouble—twice a day during the winter might possibly have been sufficient—and always given warm. Every morning at day break a fire was made under an iron boiler in which enough had been left overnight for the morning's feed—so soon as that was warmed, the hogs were fed and the boiler filled again—they were fed a second time when the hands came to dinner, and lastly at night, the swill remaining warm enough until that time. I think the corn and manure saved by this method must be a fair equivalent for the labor.

A plan for raising cymlins is given in the first volume of Skinner's 'American Farmer,' p. 367. I have pursued it for the last two years, and it affords me a supply of the best summer food, not only for hogs, but for my milch cows which are fed with it night and morning. They seem to relish it highly; it improves the quality and increases the quantity of milk; and I may safely affirm that finer butter and cream than mine cannot be found, even in the justly famed market of Philadelphia. If the article last referred to, has not been published in the Register, I think you will find it worthy a place, and that any of your subscribers who will try the experiment will be remunerated by it fully.

Deane's 'New England Farmer or Georgical Dictionary' is doubtless known to you. In the course of a few years of imperfect farming, I have derived so much aid from it, that I cannot but wish a copy was in the hands of every farmer in the Old Dominion. If you have not the book, I wish you would get it, and if you find it such as I have described, consider whether it might not be republished (for it is nearly out of print) with great benefit to our good people, especially small farmers, and thrifty housewives; for it takes in the whole range of domestic and rural economy.*

TOBACCO—DUTY ON IT PAYABLE IN EUROPE.

From the American Farmer.

As the American Farmer has been adopted as the official organ of tobacco planters, and of intercommunication on the subject of their peculiar interests, and especially in reference to the grievance of high duties on it in Europe, and the best means of obtaining relief therefrom—permit me to make a suggestion or two, for the consideration of planters, and to invite discussion with a view to a better understanding on the points submitted.

It is a trite saying that there are two sides to every question; and that in regard to any doubtful one, before we adopt any conclusion, we should *hear both sides!* Now as to the question of high duties, there can be no doubt that they are enormous--and that they so much enhance the price of the article in Europe, as very greatly to diminish the consumption of American tobacco. Take for example the instance which has been exhibited by the convention at Washington, of which you were the secretary, and reflect on the astounding fact that Great Britain, by her high duties, levies on this single branch of American industry, a tax almost equal to the support of her navy—those "wooden walls" to which she is indebted for the support of her monarchy--the safety of her island from invasion, and for means of government and sway over sea and land to such an extent, that the sun it is said never goes down on all her dominions at once!—Look too at the vast sums

* The article referred to above will hereafter be republished in the Farmers' Register. The separate publication, for sale, of other agricultural works as well as Deane's, has been suggested to us by several persons, as likely to be advantageous to the public, and profitable to the publisher. In regard to the last point, we can answer, with confidence, that of neither of these, nor, as we believe, of any other book, if now published in Virginia, and no matter how great the merit or utility, could enough copies be sold, to pay the expenses of publication. Periodical works only can be sustained, upon previous subscriptions; and in no other way can any publisher venture to print a work, unless his object be to serve the public interests, without regard to his own.—Ed. F. R.

raised in France and other countries on this peculiar object of American production, and nothing can be more natural at first view, than the sense of wrong and the feeling of resentment and retaliation. But is there not another side of the question? we are not only to consider the amount of duties imposed in foreign countries, but, whether in these countries the cultivation of this odious weed is not altogether prohibited or virtually forbidden by high internal duties, and, how far, were it not for such prohibition, they are capable of producing tobacco for their own consumption, to the exclusion of the American article? If I am not misinformed, and that too by those who have opportunities of acquiring the most extensive and practical information on this subject, the capacity of France and Germany to produce tobacco for their own use, very far transcends in quantity the general American impression or estimate on that point. Permit me then to ask, respectfully, through the American Farmer, for more specific information in regard to their resources in this respect. Let me put the question to Mr. T. F. Bowie, Mr. Jenifer, Mr. Dodge, and other warm and able champions of this most extensive and important interest; whether we may not gain more by the privilege of exclusive supply under high duties to these countries where its growth is actually or virtually prohibited, than we should by a reduction of these duties accompanied by encouragements to grow the article? These foreign governments admit that the duty is excessive, but they contend that it is laid for revenue, and that if they deprive themselves of that, by reduction of duties to the standard which we would suggest, and to a level with our moderate duties on their manufactures and productions, that with such reduction we must expect them to commence the growth for self-supply.

What is the argument which has been used by our diplomatic agents in reply to this position assumed by foreign governments?—What is the actual capacity of England, France, Germany, and other countries to produce tobacco for their own use, under the most encouraging circumstances? And again is it not wise in us to let very well alone—submitting to high duties in a market where we have no rival. Observe, Mr. Editor, that I do not undertake to answer these queries in the affirmative. I only submit whether they are not worthy of very mature consideration. I ask only for light—with every candid inquirer after truth, you will say, let us banish prejudice, and view things not as we would wish them to be, but as we find them. Every one remembers the fable of the dog and the shadow. The culture of tobacco is, at this time, and under existing circumstances, with all the disadvantages of foreign exactions and monopolies, still the most productive object to which our slave labor can be applied. True, could we procure the repeal of high duties in the countries that we, and we almost exclusively supply, and at the same time be assured that in these countries the growth of the article would be forever prohibited by nature and by government, the prospects of the narrow tobacco belt of North America would be bright as the milky way in the heavens.—But let us not forget that

"*Incidit in Scyllam qui vult vitare Charybdim,*"

is an old proverb to express the danger and the frequency of encountering a greater calamity, in our eagerness to avoid a lesser one. Finally, Mr. Editor, let me repeat, that I ask only information and only seek the truth—the legitimate object of every

CANDID INQUIRER.

ROHAN POTATOES AND SASSAFRAS BUSHES.

To the Editor of the Farmers' Register.

October 20, 1840.

On the 31st March last I planted 40 hills from one Rohan potato, one eye in a hill, in two rows. Along side of the same I planted another row of the same length of 20 hills of the purple skin Mercer potato (said to be) which I have been raising several years. The whole of which were managed alike in the preparation of the ground they occupied and in the cultivation, save that whereas the Rohan potato hills had each one eye only, as before remarked, the Mercer potato hills were planted with the potato uncut. I planted the two kinds as above with the view of testing the superiority of the one over the other, thinking more had been said in favor of the Rohan than it deserved, as is very apt to be the case when any new article is brought to notice. When I dug them, however, on the 18th September last, I was disappointed; for the 40 hills of Rohan produced one bushel three pecks and a half. The twenty hills of Mercer produced three pecks. Difference in favor of the Rohan potato.

Whilst pen in hand, I will remark that I began to fallow a piece of land for wheat on the 20th August, 1839, and finished it on the 27th of the same month. Two-thirds of the said piece of land is what may be yet called new land, as I cleared it of its forty years' growth of old field pine about six years ago. The balance, one-third, being old land. On the 26th September following, I began to fallow the balance of the field (said balance being all old land,) and finished the operation on the 3d of October following. Began the same day, that is, the 3d October, to seed in wheat both the first and the last fallowing, and finished on the 8th of the same month, that is, October. Now, one of the facts that came under my observation relative to the crop of wheat is, that the wheat grown on that portion of the old land which contained about one-third of the piece of land first fallowed, as above stated, was very much infested with onions. It is true that this is a little matter, hardly worth notice perhaps, but if it may lead to a means by which we may avoid an excess of garlic among our wheat crops, it may be a matter of some importance. The cause, as I think, why the piece of land above mentioned abounded in onions, is to be found in the different periods of the year in which the fallowing was done, as before stated, together with the effects of frost. Thus: the piece of land on which so many onions grew with the wheat was fallowed at a season of the year which gave the onions (both seed and roots) sufficient time to vegetate and advance so far in their growth that the winter's frost did not kill them; whereas the balance of the old land was fallowed at so late a period that the onions, both seed and roots, not having sufficient time to arrive at that stage of maturity which would enable them to ward off the effects of the winter's frost, of ne-

cessity perished, or were so late in vegetating that they did not produce seed. If the above conclusions follow of necessity from the facts as above stated, it will yet be a matter of doubt whether a farmer could avail himself of them, owing to the generally received opinion of the utility of an early fallow, that the entire field which is the subject of the above remarks seems to sustain. If, however, a refallow were executed to the *depth of the first fallow*, (which in most cases I should think injudicious,) then the garlic would be sufficiently exposed to the frosts of winter to be destroyed, or their growth so far retarded from other causes as to fail producing a crop of seed. It may be asked, then, if it is necessary to refallow to avoid a growth of onions, why the remainder of the old land in my field did not produce many or but few onions, as there was no refallow? Because, from existing circumstances at the time, I was induced to fallow the whole field very shallow. This, I think, superseded the necessity of a refallow, so far as the onions are concerned. Enough about garlic.

I should like to have your views relative to one of my fields which is much pestered with sassafras. I will first give you a short sketch of the course of management relative to the same for some years previous to this time. That portion of the field over which the sassafras seems to be exercising almost entire control had been in corn every other year, with close grazing the intervening year, for many years, it being considered too poor to bring small grain, save only a few oats in detached spots, until four or five years ago, when I prohibited all grazing. This change, together with the marl previously applied has made it produce comparatively good crops, of corn and oats throughout, and I believe would bring more wheat a favorable year now, than it would oats previous to marling and non-grazing. I have had a part of it in wheat since, and it is now seeded in wheat a second time. Indeed the whole of it would now bring a respectable crop of wheat, and I should put more of it in wheat, but the growth of sassafras bushes forces me to leave it to a less valuable crop in the spring; a part of that as usual will be unavoidably lost at harvest. Now, sir, what is to be done? shall I continue my present system, by which my land is evidently and rapidly improving, the sassafras gaining ground with equal rapidity, and perhaps greater, or shall I put up again my cross fences, and again subject the field to the hoof, the snout and the teeth, of every animal that can use them? I am disposed to take the latter alternative, thinking that two courses of rooting, trampling and biting will either destroy, or so far subdue them, that I can at less expense procure "the staff of life"—a plenty of good bread and good old Virginia bacon and their concomitants,—provided the latter alternative does not deprive the land of the power to produce these good things. Will it? Please give me your views in this matter. You see that I have written out my paper nearly, (though not quite my notions,) when I only intended to tell you about my big Irish potato. If you can make so much sense of this confused mass as to find out what I want to know about the sassafras bushes, and give me your advice about them, you will much oblige an old subscriber. Yours, very respectfully, R.

Having had to contend long with the same evil, and with as little success as our correspondent has had, we must confess our inability to prescribe for the destruction, or even the lessening, of the growth of sassafras bushes, on land that is not grazed, and rests from cultivation, as ours did, two years together in the rotation of four. But when the land is so highly improved as to allow a crop of either grain or grass to be made every year, and to be either removed for market, or food, or ploughed under for manure, then these annual operations, destructive to every first year's growth of the sassafras, may perhaps serve finally to extirpate the nuisance.—Ed. F. R.

A STATE AGRICULTURAL SOCIETY FOR VIRGINIA.

The following paragraph was a private communication from a correspondent whose services in support of the cause which he here advocates have been among the most zealous and unwearied. We take the liberty of putting his words to other use, (besides that for which he designed them, as matter of private and friendly correspondence,) because they serve both as a text for our comments, and an excuse for returning to a general subject on which we have before labored so often and so fruitlessly.

"As it seems utterly vain to hope for any legislative aid to agriculture, I wish you would give us an editorial article in favor of a state agricultural society. Several of our sister states, I believe, have set us the example, and surely Virginia might be roused to imitate them in so highly laudable a work. Such an institution on the plan of the Scotch and English societies, to hold their annual meetings in different parts of the state, I am strongly inclined to believe, might now succeed. What say *you* to it?"

As to the scheme itself, there can be no doubt as to its great value to Virginia, if there is enough of public spirit, zeal, and even proper consideration of *private interest*, among all her intelligent agriculturists, to carry it into operation. But we fear, and grievously do we lament that such a fear should almost forbid the existence of hope, that a universal lethargy pervades the entire agricultural class, and has rendered them so torpid as not to be roused by any new efforts that we can possibly make. It is not that they want excitability, spirit and energy, on other subjects; it is to the claims of their own great and almost exclusive interest that they turn a deaf ear, and unsteady eye—and pay to it less attention than to other matters not to be named in comparison of importance and value. We mean not to depreciate the importance of the present all-engrossing and absorbing political contest, nor to oppose the opinion of any one of our readers, no matter which side he may support, that the election of *his* favorite candidate for the presidency is of the highest importance to the

country's well-doing. But this we will say, that if the people of Virginia had in all past time devoted to the sustaining of agricultural interests, and agricultural improvement, but one-tenth part of the zeal and effort which they have bestowed on the business of making or attempting to make presidents, we should have now a condition of agriculture as flourishing as in fact it is depressed, and the supposed abstraction from political labors would scarcely have rendered the action of government worse than it has been. But the present contest, which agitates the whole country, will now soon be at an end, (for which we are truly thankful,) and *then*, if ever, the members of the agricultural class may perhaps bestow some slight attention upon their own great interests. Again, however, our fears surpass our hopes. The state of collapse, and prostration of energy, that will succeed the present high-wrought political excitement, will be very unfavorable to induce men to give proper attention to a matter comparatively so tame and uninteresting as the general agricultural improvement of their country.

Still it is possible that we may be mistaken, and that there is better ground for hope than we can venture to assume. If, indeed, many intelligent men possess the proper feeling on which to form and to keep in operation a state agricultural society, there can never occur a time in which their *proper* action for that purpose would be more beneficial than now. Such a movement, properly made, might induce the legislature to do something for the same great end; and if that aid, as heretofore, should still be denied, such a society, as might well exist in Virginia, if operating as such a society should operate, might in a great degree supply the want of governmental action. But, as in all cases of agricultural societies, every thing of results would depend on the *working* of the society; and according to its first plan of operation, the same society might prove either worthless, even injurious, or in the highest degree beneficial to the improvement of agriculture.

We will not presume as yet to propose a meeting for the purpose of forming a state agricultural society. But we respectfully beg of all persons who are impressed with the importance of the measure, and are disposed to bear their share of the joint labors, to urge the matter upon others, and in some manner to indicate the extent of such wishes. If informed of any sufficient grounds for the movement, we will take upon ourselves hereafter to invite a meeting for this object at Richmond, at some specified and early time, during the approaching session of the legislature.

CROPS, REAPING MACHINE, &c.

To the Editor of the Farmers' Register.

Eastern Shore of Md. Oct. 20, 1840.

I see by the Register that the report of the cotton crop to the south is very unfavorable, and also the wheat crop in Virginia; and I regret to say that the markets will find a diminished supply of wheat and Indian corn from this part of the country. The crop of wheat is short, and defective in quality, and I doubt much if the crop of Indian corn will equal half the product of last year. There has been partial sufferings from drought; but the great injury has been sustained from the cool season, which has been probably felt more to the north than with us: though, where lands are highly improved, Indian corn seems greatly to resist the influence of a bad season.

I understand several of Hussey's reapers were carried into Virginia, and used during the present year; the opinion formed of them by judicious men is a matter of much interest, in the wheat growing regions, and I have been disappointed in finding no account of the work done by them, in your state.*

The answers given to your queries in relation to the beneficial effects of marl are highly satisfactory; and I can add my testimony as to the improving effects on my farm. W. C.

PUBLICATION OF THE "SOUTHERN MAGAZINE AND MONTHLY REVIEW."

Our subscribers and friends will see by the advertisement on the cover of this number, that, in addition to the Farmers' Register, we propose, if sustained, to undertake the publication of another and distinct monthly magazine and review, devoted to literature, science, and general politics. *This* is not the place to speak of matters so foreign to the plan and contents of the Farmers' Register; and the subject is mentioned here, only so far as in connexion with the interest and well-being of this, the already established publication.

Many persons may infer that the successful progress of the new undertaking will be detrimental to the character and usefulness of the older, by the publisher of both being thereby overburthened with labor, both of body and mind. This is a mistake; and to ward off its possible effect on the Farmers' Register, we beg leave here to explain the grounds of the directly opposite position, viz: that the direction of, and editorial labor and difficulty of carrying on two publications of such different plans, together, will be *less* than of the existing one alone. Some knowledge of the general difficulties of the printing part of the business, in the southern states, would go far to establish this paradox, even in advance of the explanation to be offered.

When the Farmers' Register was first commenced, the undertaker designed only to be the proprietor, without even changing his then country

* We shall be pleased to have the testimony, desired above, furnished for publication. We have heard that while those who have tried Hussey's reaping machine concur as to its perfect performance, on wheat clear of moisture from rain or dew, yet that judicious farmers differ as to the economy of its use.—Ed.

residence; and had no expectation of being compelled also to become both publisher and printer, and to carry on every branch of the mechanical as well as of the intellectual part of the business. All that he had counted on was to furnish the matter, and to pay, at fair prices, for the printing and issuing the work. But a short trial showed the impossibility of having this done, properly and punctually, by contract, or by the agency of others. In the low condition of the publishing business in Virginia and the more southern states, (owing altogether to want of sufficient employment and support,) no man can safely conduct any periodical work, so as to comply with his obligations incurred to the public, without being his own printer—and it was soon apparent that this must be the resort for the Farmers' Register. Through all the numerous difficulties of such an undertaking, first in the country, and since in town, and with more causes of embarrassment and loss than any persons not more experienced can conceive, it was not until the present year, (which is the seventh of the editor's *apprenticeship*,) that the present state of things was reached. This is, a well fitted and supplied printing office, with enough of good hands, (all of which save one were first taught and trained in this office,) with every material and facility necessary for the publication of the Farmers' Register, or of any other work. But this long sought condition of things is accompanied by another important disadvantage to the interest of the property, that of the work of the office not being enough for the full and profitable employment of the establishment which it has been necessary to create, and which it is necessary to maintain, even if not fully employed. In this respect, then, it will require no more words to make it clear that a great increase of merely mechanical labor and business to the printing and publishing department, will not only increase profits, but will remove the greatest existing embarrassment and difficulty that can attend any business—the deficiency of full employment.

Next as to intellectual labor. The greatest source of perplexity and difficulty encountered in editing the Farmers' Register, (and which must apply to any agricultural periodical in this country,) is the scanty aid of contributors, and consequent small supply of materials in original matter—and, from the same general defect in all such journals, the barren field from which selections in general are to be culled. If the supply of materials were as abundant as it is defective, the editor's labor would be thereby diminished instead of being increased; or rather, the sore feeling and discouraging embarrassment, from his having, at most times, *nothing to do* of proper editorial labor, and yet being continually confined to his home waiting for the expected but uncertain arrival of the few materials necessary to prevent the actual suspending of the printer's labors, would be exchanged for plenty of pleasant and useful employment, and the ability to prepare for the press, in a few days, what he has usually to wait for a month. Now, even if there is no change to be hoped for in this general and lamentable apathy of agriculturists in regard to their peculiar interests, and even if these difficulties of the Farmers' Register are to continue so long as it shall be published, (which may Heaven forbid!) still the adding to the editor's labors the publishing of a new work for which materials will be more abundant, because drawn from different and more abundant sources, will serve to fill up the idle and therefore most wearisome portion of his time; and even, after performing both duties, release him from much of the confinement now and heretofore caused by the mere want of materials to work upon, and the consequent risk of not furnishing regular employment for the printing establishment. The better, therefore, that either of the two publications may be sustained, the more beneficial will it be for the other.

It is proper to state that the two publications will not have the same proprietor, and therefore that the pecuniary transactions will be kept entirely separate.

MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

The business of the present month has been more in the sale of goods, for the supply of the country generally, than in that of our own produce—the crops of cotton and tobacco (of 1839) having been nearly all disposed of.

An unusually large quantity of goods has been sold to make up the deficiency of the previous year or two. The prices of cotton, woollen and other goods of American manufacture, are extremely low—too low generally, to remunerate the manufacturer. The low price, however, tends to increase the consumption, and may thus react in due time.

The question of peace or war in Europe, arising from the differences between Turkey and Egypt, in which the great European powers take sides, remains undecided, and has of course an important influence on commercial arrangements and prospective operations.

Trade with China is suspended by the opium war, which Great Britain is waging against her. It is reported that a British force had destroyed the forts below Canton, and were about to make an attack on that city.

The crop of tobacco now beginning to arrive at market, chiefly by wagon loads in bulk, is of good quality, and in good condition, as the season has been favorable for curing it. Such commands, $5 to $6¼ for leaf and in proportion for lugs, and in hogsheads higher prices, up to $8 or more. Old leaf, $6 to $9½, &c. European markets are brisk, and shipments of the last crop bid fair to pay good profits, which will cause the present one to sell well.

The year's receipts at New Orleans were 44,000 hhds., and the exports 41,000, of which 25,000 to

foreign ports. The inspections in Virginia 58,000, of which the foreign export of the year ending 1st instant, was 27,400, and about 8,000 hhds. more will be exported this month. Although the crop was unusually large, the previous one having been on the other extreme, left all markets bare, and prices are consequently supported.

The crop of cotton (of 1839) is stated at 2.178,-000 bales, to which may be added about 37,000, manufactured in the western and southern states and not included in the statement. Of this, 1,880,000 were exported to Europe, and about 333,000 manufactured in the United States.

The weather during this and part of the preceding month has generally been favorable, and this may counteract to some extent the injury by previous excess of rain and by caterpillars. If, however, the present severe frost, (October 26,) the first we have had, extends to Alabama and Louisiana, it may diminish the product materially: but after so large a crop as the last (800,000 bales more than that of 1838,) there can be no deficiency of supply, even should the present be a small one. The picking season, as yet, has been entirely favorable and the quality is good. Price of new in Petersburg 9¾, in Charleston 8½ to 9¾, in Mobile 8 to 10½, in New Orleans 8 to 11, (not including the lowest qualities,) and with a tendency to decline in all these markets.

Supplies of wheat in Richmond and Petersburg continue very limited, and prices 3 to 5 per cent. higher than those of Baltimore, Philadelphia and New York, where quotations are 90 to 105.

The quantity of flour and grain cleared at Buffalo and Black Rock for the Erie canal to 1st October, in the last four years is thus stated:

1837,	60,000	bbls.	flour,	341,600	bushels	wheat.
1838,	157,000	"	"	492,000	"	"
1839,	206,000	"	"	506,000	"	"
1840,	528,000	"	"	694,000	"	"

And this is exclusive of the vast quantity produced in the extensive and fertile country east of Buffalo, and of the large shipments, from ports on the lakes, direct to Canada.

The export of flour and grain to England has nearly ceased, the present rate of duty amounting to prohibition.

Indian corn 45 to 48 cents. No sales yet of new crop.

Arrangements are *certainly made* by the banks of Philadelphia for the resumption of specie payments on 15th January, and consequently those of Maryland and Virginia will resume about the same time. X.

October 26.

NOTES OF AGRICULTURAL PRACTICES ON THE GREAT PEEDEE, S. C.

Extract from the Southern Cabinet.

Having given a general survey of this section of country, we will now enter somewhat more into details. The systems pursued by those who cultivate the swamp-lands are similar; as well as by those who cultivate the high land. There are differences in the details; but we can only mention a few, as we proceed on, for it would occupy too much of our limited space to enter into particulars. We shall select Col. Williams' plantation on the Great Peedee, as illustrating the practices of the planters on the river-swamp lands, and that of Gen. Gillespie's, that of the up-lands. We will commence with Col. Williams', which was the first we visited, and with the details of the management of which, we became better acquainted than with that of any other.

The soil of the river-swamp plantations we have already described. It is generally what may be called a sandy loam, becoming a clayey loam as you approach the high-lands. There are spots of clay, and sandy ridges, but these are not frequent. By far the largest portion is a fine black friable soil, about six inches deep, resting on a clayey substratum. The principal crops cultivated are cotton and corn—potatoes only in very small quantities; rye for early pasturage, and oats principally for turning under as manure.

Cotton, preparation of the land for, and culture of.—About one-half of the land intended for cotton is manured with compost taken from the cattle-pens, stables, &c. The balance required to make out the quantity needed, is taken from newly cleared grounds, or fields which have been rested one year, and the growth turned under, or which have been manured by the turning under of a crop of green oats. The oats sown for this purpose are put in, in the months of October and November, at the rate of one bushel and a half per acre, and the ground thrown into ridges of the width intended for cotton the succeeding year. By this operation the oats are covered. In July, (or as soon after, as other work necessary to be done will permit, sometimes not until late in August,) the oats are turned under, reversing the ridges, and burying them completely. In the spring following the ridges are again reversed, (at which time the oats are found to have entirely rotted,) and the beds formed. Occasionally, manure is used in addition to the green crop turned under, but this is not often done. When the oats are turned under late, the seeds having matured, there is another growth of oats, which, with the weeds, form sometimes a pretty thick coating, all of which is of course turned under, or, as is sometimes the case, listed down previous to reversing the beds. When the fields have been rested, all the growth, which is considerable, (for no cattle are permitted to pasture on them,) is listed under as early in the fall as practicable. If not done early it is preferred to turn it all under with the plough, so as to mix it more intimately with the soil. Gypsum has also been tried with decided success, the seeds merely wetted, rolled in it, and planted.

Those fields which the year previous were in cotton, and which it is intended to plant again with the same crop, are prepared by running a mould board plough twice in the centre of the alleys and forming as deep a furrow as possible, the bull-tongue follows breaking up the soil still deeper. These furrows are then filled with manure from the various pens. The beds are formed by the plough and dressed over with the hoe. The trenching plough (already described) is run on the top of the beds, making them smooth and forming the trenches, into which the seeds are scattered at the rate of two bushels per acre, and covered by the horse-rake. The beds are formed from four to six feet apart, and very wide at the base, nearly meeting in the alleys.

The first working is done with the hoes going over and lightly shaving down the beds. This also makes them smooth and prepares them for the second operation, which is with the "scraper." The cotton is thinned at the first working, leaving

a single stalk not nearer than eighteen inches and not more than three feet. The after culture is performed nearly altogether with the skimmer, which shaves the surface of the beds, throwing a little earth up to the cotton. The hoe follows, merely going over the tops of the beds, and those spots where the skimmer has not worked well, or cannot approach. A skimmer does three acres per diem. An able bodied hand will do from fifty to one hundred rows of two hundred and ten feet in length, according to the grassiness, &c. of the fields. The fields are gone over from every ten to fifteen days. The *Petit Gulf* seed, as we have elsewhere said, alone is planted. The yield from this is an average of one thousand pounds of cotton per acre. From thirty-five acres Col. Williams has gathered two thousand one hundred and ninety-six pounds per acre. The pickings are usually accomplished in from one to three times going over. The ginning is done on one of the plantations by water power—on the others by animals. Houses for the reception of the cotton are built in several parts of the different plantations, especially when distant from the main settlements.

Corn.—In the rotation adapted by Col. W., corn usually follows cotton. The furrows are run across the beds, and so deep as to bring the bottom of them to a level with the alleys. The corn is planted exactly where these furrows intersect the old beds, and where there is a quantity of manure remaining from that used for the cotton. Sometimes additional manure is applied. This most generally (if not always) is cotton seed, whose vegetative powers have first been destroyed,) in quantities of about a pint, which is put in the holes. If the fields have been resting, the whole ground is broken up completely and turned over. It is then laid off five by six, and the corn planted, and when up thinned down to from two to three stalks. The first working is performed with the bull-tongue plough, by which the ground is thoroughly and deeply broken up. It is afterwards cultivated quite shallow, with the scraper, which is run both ways. When laid by, it receives a slight hilling but not before. The usual product is thirty bushels per acre, and sixty bushels have been gathered. We have already described the variety of corn cultivated by Col. Williams, which he has brought to its present productive state by long and careful selection. In producing many ears, it resembles the "Baden," but the stalks, ears, and grain, are infinitely larger, and in this respect differs not materially from the corn usually cultivated in the state, but in productiveness far exceeding. We counted on a dried stalk seven large shucks, (the corn had been taken out to plant.) This corn is not purely of one sort, but seems to be a mixture of several, for among it you can find all of the varieties of grain from pure flint to Tuscarora. The ears differ also in size, having from eight to sixteen rows. The grains are usually of good size. We hope the colonel will carry his selections still further, and get rid of all the small sized ears, unless he dicovers that these are the most productive—then of course get rid of the other. That which is best should be retained, and the rest discarded, for they cannot all be equally good. A fact was mentioned to us, which was certainly unknown, not only to ourselves, but to all the planters of *this* section of the state, with whom we have conversed on the subject. It is, that the *first* suckers from corn, if left undisturbed, will always produce ears *on* the stalk, similar to the parent stalk, and not an abortion on the ends, as we so often see in our fields; and in confirmation of this, we were shown four dried stalks, which had grown in such close proximity, as to have all the appearance of being the parent stalk and suckers. It was out of the grouud, and divested of soil, but the mass of roots was so thick that we could not ascertain positively, without separating and thus destroying the specimen, (which we were not willing to do,) whether they proceeded from one or more roots—the appearance decidedly was, that the whole sprang from one. We counted on each of these stalks two *large* ears, with no greater difference between them than might be found between adjoining stalks. Col. Williams first mentioned the fact to us, and in conversing on the subject before one of his overseers, (who had, by-the-bye, been with him a number of years,) the latter observed that he thought every person knew it. The abortions we have on our suckers are attributed to their not being the original or first, but such as had been thrown up a second time by the plant which is said not to produce ears at the sides, but merely a few scattering grains on the tops of the stalks. We have mentioned these facts to many of our planters in this section of country. None have made observations sufficiently accurate, to speak positively on the subject, though the general opinion is, that such is not the case in the lower country. *Is it not one of the peculiarities of the corn cultivated by Col. Williams?* We would be glad to receive communications on the subject from some of our friends.

Oats are principally cultivated for turning under as manure, and seldom more is saved than will answer for seed the ensuing season, unless there appears likely to be a deficiency in the corn crop. When this is apprehended, as much is gathered in as it is supposed will meet it, which is done, not by cutting and thrashing in the usual way; but the hands are sent in and merely strip off the grains from the stalk, leaving the latter standing. In this way each hand gathers sixteen bushels per diem, and on one occasion twenty-four were gathered. This is supposed to be fully equal to cutting down and thrashing it out; and there is this advantage, that the stubble is left on the field to be turned under as manure.

Rye.—This is only sown for early pasturage, and as there is generally more sown than can be eaten down, a considerable quantity runs to seed, on which the hogs are turned as soon as it is ripe.

Peas are very little attended to, a small quantity being planted near the settlements, into which the cows are turned after harvesting the crop. None are picked except for seed.

Sweet Potatoes.—Not cultivated as a crop. A small quantity is usually cultivated, which is given to the negroes as a luxury, and never forming any portion of their week's allowance.

Hay.—It is seldom that any attention is paid to the making of hay, as it is never considered worth the attention of the planter, it being too costly to send it to market, and there being usually as many corn blades or leaves as will suffice for the use of the plantation, corn being planted in large quantities. We still, however, hope to see it yet supplying the place of northern hay in our market. When the ground is broken up in May and June, the growth of crab or crop grass is very heavy, being four to five feet high. Col. Williams had

never ascertained the weight per acre, but promised to do so the present season, and inform us of the result.

Manures, and their application.—We were much gratified on ascertaining the great attention paid to the collection and application of manures in this section of country. Every where we visited, this branch of agriculture appeared to be deemed of primary importance. We were too late to behold the large accumulation on the different plantations, but we saw preparations making for the collection of a new supply for the succeeding crops. The plan usually is, to cart the corn and cotton stalks into the pens as opportunity offers, and constantly to accumlate in them, pine and oak leaves on which the cattle are nightly penned. This compost, when applied to cotton, is spread in the furrow at the rate of an ox-cart-load for every fifty yards square. To corn it is applied in the hill.

Cotton seed is highly prized here as elsewhere, as a manure for corn. The practice varies. By some it is applied under the corn, but most generally above, in quantities of from one to two pints to the hill. That which is applied under the corn gives the most luxuriant growth, whilst young, and hence is apt to mislead the planter; but when earing time arrives, it is found not to be equal to that to which it has been applied later and on the hill. It is highly probable that a large portion of its good qualities become exhausted before the corn requires it at earing time, and that it will be more efficient if applied later—still, however, it appears to us, that placed on the top of the hill, and left so long exposed to the action of the weather, must also exhaust its valuable properties. Would it not, therefore, be better to have the first furrow run near, (throwing the earth from the corn, the cotton seed placed in these furrows opposite the hills on each side, the earth returned by the plough and the seed covered. The whole strength of the manure would, in this manner, be retained; and when we recollect that the valuable properties of cotton seed reside almost entirely, if not wholly, in the oil it contains, and that this is easily and rapidly dissipated by heat, we may, perhaps, see the utility of removing it from the immediate and direct influence of the sun, and interposing a medium which will absorb and retain the gases as they are disengaged. There are probably no salts of consequence to sink, and the loss sustained by this species of manure, is by evaporation, not infiltration. Cotton-seed is also applied to cotton, (sometimes mixed with other manures,) being spread in the furrows at the rate of from thirty to forty bushels per acre. A curious circumstance connected with the application of cotton-seed as manure was mentioned to us by Col. Williams. Many years ago he manufactured oil from cotton-seed, and applied the refuse as manure. He found that when the cake was used in pieces larger than about four inches square to the hill, the plants were decidedly injured. In one instance it was applied at the rate of between three and four hundred bushels per acre. Not only the crop was destroyed by the application, but even the fertility of the soil for many years.

Gypsum has been used with decided success, as a manure for cotton: but the difficulty in obtaining it, has prevented its more general use. The seeds, in all the experiments, were merely rolled in the plaster. In one field in which every alternate five rows were thus mannred, the growth differed so much in color as to give a riband-like appearance to it. There are some experiments making this year, which we hope to have reported in future numbers of this journal.

In clearing new land, Col. Williams does not permit any thing to be burned, but buries as much as possible. The larger logs, which cannot be so readily got rid of, are piled up in different parts of the field, and when they commence rotting, they are moved every year or two, thus manuring the portions of field where they happen to be.

Two other modes of improving his soil, have been resorted to by the Col. with decided success. The first is by altering their textures by the intermixture of sand with clay and clay with sand. The improvement has been decided and great. Clayey soil is more improved by the carting on and admixture of sand, than is sand by the admixture of clay. Considerable quantities of ground have, in this way, been improved.

The other mode has been by under or sub-soil draining. This has been resorted to with great effect, and we saw several acres of swampy marsh ground, which in its original state produced only rushes and the usual growth of such lands, entirely reclaimed, as dry as any other part of the field, and judging from the old stalks of corn, it had produced a better crop. This piece was the first attempt made by Col. Williams, with which he has been so thoroughly satisfied that he has underdrained all the land in his extensive fields which require it.

TO SUBSCRIBERS, IN REGARD TO CONDITIONS OF THE FARMERS' REGISTER FOR VOL. IX.

Every individual whose name is on the subscription list of the Farmers' Register is respectfully requested to read and consider the following remarks, with the same degree of attention as if they were addressed to himself specially and particularly.

For the last two years, a continued effort has been made, at great risk and cost to the publisher, by means of a reduction of the price contingent on certain conditions, to extend the circulation of the Farmers' Register, and thereby to increase its beneficial effects on agricultural and general interests. (See the Conditions, and appended remarks, at page 639 of vol. vii.) The expected benefit to the public, so far as found in the extended circulation of the work, has been considerable; but not enough so to compensate the publisher for the additional outlay for the much larger increase of the copies printed of the two last volumes (7th and 8th) made, in misplaced confidence of the liberal offers being appreciated, and more fully met, by the agricultural public. However, it is not for the publisher to complain on that score. The like contingent reductions of prices, for advanced payments, will be continued, with slight variations, which will not be less advantageous (if availed of) to subscribers, and which are required because of the many cases of misunderstanding of either the let-

ter, the intention, or the operation, of the conditions referred to, by new subscribers who did not take the trouble to read or consider them. Thus, many have been misled, either by their own inattention, or the incorrect verbal representations of others as careless; and in almost every such case, the subscriber, (if not, as is very often found, totally disregardful of *all* obligations,) considers that his own erroneous and unfounded impressions, received without reading, or attending to, the plain letter of the published conditions, should fix the rule of construction, and the measure of his obligations. It is in the hope of leaving no possible ground hereafter for such disagreeable differences of opinion, and controversies, and for the many losses of debts thence accruing, (in addition to all other previous and general losses,) that the slight changes have been adopted as to the *extra copies* of the publication offered by the conditions, formerly and now.

With these views, the general 'Conditions' for the 9th volume now published in this number, are restored, in purport and substance, to what they were originally; and the *extra allowances* for advanced or early payments, are offered separately as *premiums* to such subscribers as may choose to avail of the benefits, and thereby aid the object of extending the circulation of the work, and putting the publication as much as possible on the footing of the *advanced "cash system."* And it is hoped that both the general conditions and the premiums are stated so distinctly and fully, that there will remain no subject for misconstruction.

It may be seen that every existing subscriber, who shall make payment for vol. ix., clear of all deductions, and in advance of the commencement of the publication, shall receive a premium of an *extra* copy of the same; but *to be directed to his own name*, instead of, as before, to the name of some new subscriber.

If the payment is delayed, but not longer after being due than the issue of the 6th number of the volume, still the subscriber may receive an extra copy of either vol. 7 or vol. 8. To extend the limit of time still longer would be equivalent to offering a premium for *delay of payment.*

The subscription for any *additional copy*, made thus hereafter, will be discontinued, as a matter of course, at the end of that particular volume; thus leaving the subscriber free to renew the like arrangement, or not, as he may choose, for another and for every succeeding volume. While it is hoped that this change in the direction of, and in the duration of the subscriptions for, the extra copies, will leave no possible ground for mistake and unpleasant disagreement, its effect will be, as to every subscriber who chooses to go upon the *system of advanced cash payments*, or even of early payment, to give to him an extra copy which he may dispose of as he pleases—whether to any other old subscriber, whose subscription is *in due time* discontinued for that purpose—or to any other destination, more advantageous to the circulation of the work, and the profit of the publisher.

Every subscriber, therefore, may choose whether he will put himself upon the *credit* or the *cash system* of payment; and if the latter, it must be observed that the limit of the 31st of January, or the time of issuing to the subscriber his first number of the volume, *will be strictly adhered to in all cases.* And, though it cannot be rightfully or properly *required* by the publisher as a condition, it will be greatly to his pecuniary advantage if every such order, for *additional supply*, as well as every intended order for *discontinuance*, should be sent in as early as the *first day* of January, when the printing of the new volume will be commenced, and the number of copies of the edition must be determined on and fixed for the year. While, of course, the publisher desires to retain the support of all the present subscribers, and is thankful for the continued support of each one, still, he desires to retain no subscribers' names against their will, or in consequence of the commencement of a new volume, and the consequent renewal of their obligations, coming on them by surprise. Therefore, as in former cases, he notifies all of the approach of that time three months before its arrival; and earnestly asks, as a personal favor to himself, that all who have determined to discontinue their support to the work will give the proper notification thereof, and as early as may suit their convenience.

CONDITIONS OF THE FARMERS' REGISTER,

FOR THE NINTH VOLUME, TO BE COMMENCED JANUARY, 1841.

Article I. The Farmers' Register is published in monthly numbers, of 64 large octavo pages each, at $5 a year, payable in advance. [See also "PREMIUMS" below.]

II. All mail payments must be made in bank notes, or checks, of PAR VALUE in VIRGINIA—or otherwise of a CITY bank of the state in which the subscriber resides;* and all letters to the publisher (except such as contain articles for publication) must be POST-PAID; and the publisher assumes the risk of loss by mail-carriage of all letters and remittances conforming to the foregoing con-

* It will be *again* required (as formerly) that mail payments shall be made in the notes or checks of *specie-paying banks*, should any such banks be in operation in the states in which subscribers severally reside. Until then, the publisher, like all other creditors, and laborers at fixed prices, must submit, as now, to be defrauded by the operation of the non-specie-paying banking system, of the difference in value between the *best* of such bank paper and specie.

ditions, and which have been *properly committed* to the mail, or to the hands of a postmaster.*

III. If a subscription is not directed to be discontinued before the first number of the next volume has been published, it will be taken as a continuance for another year. Subscriptions must commence with the beginning of some one volume, and will not be taken for less than a year's publication.

IV. The mutual obligations of the publisher and subscriber, for the year, are fully incurred as soon as the first number of the volume is issued; and after that time, no discontinuance of a subscription will be permitted. Nor will a subscription be discontinued for any earlier notice, while any thing thereon remains due, unless at the option of the editor.

Address— EDMUND RUFFIN.

Petersburg, Va., Oct. 31, 1840.

PREMIUMS IN EXTRA COPIES, OFFERED IN CONSIDERATION OF EITHER ADVANCED OR EARLY PAYMENTS.

1st. To every subscriber who shall pay for vol. 9, *strictly* according to the above conditions (in Articles I. and II.) before January 31st, (when No. 1. will be issued,) an extra copy of the same shall be sent; or instead, if preferred by him and so ordered, a copy of either vol. 7 or vol. 8. In like manner, and at same rate of deduction, any one person may obtain any number of copies to supply others.

2d. To every subscriber, not thus paying *in advance* of the publication, but who shall do so, and in all other respects comply with the above conditions before June 30th, an extra copy of either vol. 7 or vol. 8 shall be sent; and the same to every new subscriber, paying as above required (in Art. I. and II.) at the time of his subscription being ordered.

Remarks.

Any extra copy, sent as above stated, will be directed only to the *name* of the individual entitled to it as a premium; but sent to any post-office that may be desired. The sending of every such *extra* copy will cease with the volume; but the like arrangement may be renewed, and similar advantages obtained by any subscribers hereafter, upon the renewed performance of like conditions.

☞ No agents, or general collectors, are employed for the Farmers' Register. But any subscriber, postmaster, or other person, may obtain for his own profit the large allowances offered in the foregoing premiums, by procuring the benefits to the publication for which the premiums are offered.

* "A postmaster may enclose money in a letter to the publisher of a newspaper, to pay the subscription of a third person, and frank the letter, if written by himself. (Signed) Amos Kendall, Postmaster General."

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